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# STEEL

*For forty-eight years*—IRON TRADE REVIEW

April 30, 1931

APR 30 1931

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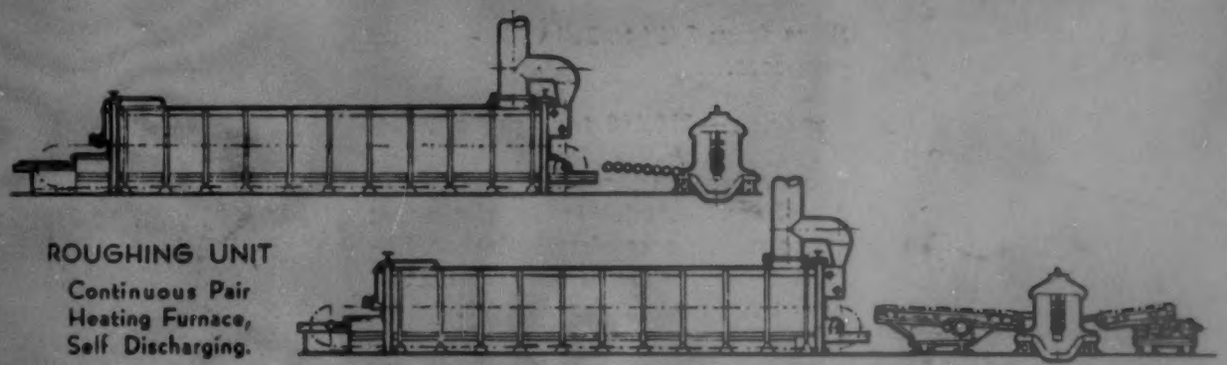

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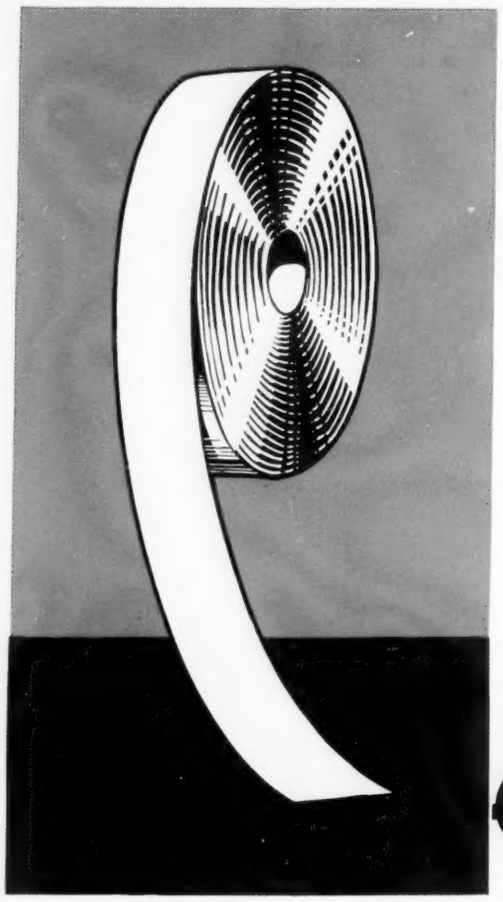

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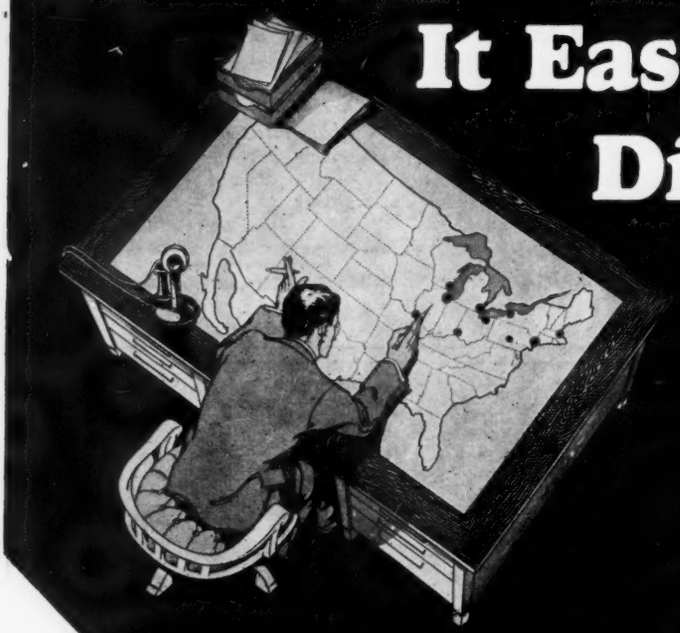

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Volume 88 Number 18

STEEL

*For forty-eight years*—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

# This Week in Steel

HERALDED last week by National Steel and Otis, the Big Parade of quarterly reports of the steel industry is now getting under way. Passing in review this week (Page 17), with colors drooping, are United States Steel, Jones & Laughlin, Youngstown, Inland, Colorado, Gulf States and Newton, to be followed shortly by Bethlehem.

The story the reports tell is not cheerful. Of the eight integrated producers reporting thus far, only one earned its common dividend last quarter. And with the second quarter traditionally not so good as the first and steel production apparently over the crest for the first half year, the issue in steel is not how to make a profit but how to minimize losses.

Perhaps it is because a year and a half of declining activity has numbed the industry, but the shock from the financial situations now being disclosed is not great. The industry apparently is willing to face the facts. Besides, the resistance which slowly subsiding demand for steel is encountering indicates (Page 55) that current production—this week slightly higher at 50 per cent—represents close to bedrock requirements.

The oil which is being poured upon the troubled waters of independent producers in the Middle West, through reorganization of an investment trust having large holdings in steel, cannot help but make smoother sailing (Page 15). An adjustment of the Bethlehem-Sheet & Tube tangle, which would be beneficial to the entire industry, is a potential by-product of a major financial operation.

## Those Who Look Can See Silver Lining

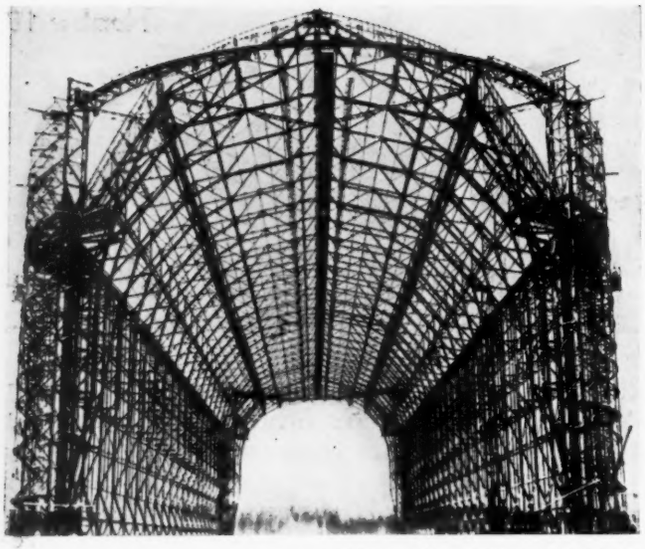
Those willing to lift their eyes occasionally can discern a number of rifts in the clouds—not the pure sunshine of forced optimism but genuine, unrelated improvement. For example (Page 23): Of 60 steel founders canvassed by their national organization 5 report business good and 42 fair; A Chicago hardware house has just had its best day's sales in 76 years; April shipments of a large automobile parts maker are 10 per cent greater than in April, 1930; Charles M. Schwab, never yet wrong on his long pull forecasts, sees a record prosperity as the sequel to the current depression.

## No Wufus Birds Perch on A. T. & T. Wires

An easy victim to the 2-cent stamp in the first stages of retrenchment, the long distance telephone call may be the first to come back as it summons goods to depleted shelves and warehouses. President Gifford of the American Telephone & Telegraph Co. is in an enviable position

*Acme-P. & A. Photo*

Looking aloft at the Empire State building. "For the masterful treatment of an office building as exemplified by the Empire State building", William F. Lamb recently was awarded the Architectural League's gold medal of honor



*International Newsreel Photo*

A steel spider web—for Zeppelins: This is the framework for the huge hangar rapidly nearing completion at Friedrichshafen, birthplace of the German leviathans of the air

to read the signs of the times (Page 23), and to him the signs spell returning prosperity. . . .In the category of Wufus birds President Gifford places those executives who long for a return to pre-war conditions, Wufus birds being a species which fly backward to keep the wind out of their eyes and which are interested only in where they have been and not in where they are going.

## Sheets, Strip Hold Gains Even in 1930

No Wufus birds roost in the sheet and strip industry, for it knows definitely where it is going. American Rolling Mill's new classifications (April 23, Page 24) are visualized as a vehicle for righting a distressing, uneconomic situation, and indications are that with some amplifications (Page 18) the new setup will be generally adopted. . . . For one thing, if the few remaining unionized mills are to continue relations with the Amalgamated Association a new basis for the tonnage rate may have to be devised. . . . Meeting at White Sulphur Springs this week-end, executives of the sheet and strip industry will use the past (Page 16) to get their bearings on the future. Per capita consumption of their products has been expanding, even 1930 showing a gain over 1924.

## «Raising the Flag» a Pagan Ceremony

Mere obeisance to pagan superstition is what New York terms (Page 25) the ceremony of raising a flag when the topmost structural steel member of a skyscraper has swung into place. The truly orthodox structural ironworker prefers a tree, symbolical of the day when man sought shelter in trees and seeking their benediction even in today's towering steel structure. . . . It is structural work that is largely maintaining present market activity in steel, awards for 1931 to date (Page 60) totaling 757,799 tons compared with only 571,555 tons a year ago. . . . Automobile requirements, while comparatively brisk (Page 55), are ebbing as Ford falls back in the race. . . . The courts may have to decide whether District of Columbia commissioners shall obey the letter of the law (Page 65), accept the lowest bid and buy French cast iron pipe fittings for the national capital.

## Welding Passes More Milestones in High

In its inherent, quiet way welding has built up interest to a new peak. When the American Welding society met in New York last week (Page 39) it boasted of a record membership of 1424. Speakers cited much progress, accounting it an accomplishment that the navy has accepted welded boilers for scout cruisers, noting that welding is more generally accepted in shipbuilding. . . . The army, meanwhile, has commissioned (Page 15) the first all-welded plane rescue ship . . . . Welded structural members for use in reinforced concrete construction can be made lighter than similar riveted members, one authority declared (Page 40) at the New York convention. . . .Steel founders appraising welding as a possible competitor, are not disturbed, only 12 per cent sensing (Page 42) inroads.

## X-Ray Eye Places OK on Welded Joints

But welding is treading no royal road. Service required of many welded joints, especially those in pressure vessels, demands that the welds be sound (Page 31). Thus far the X-ray has proved the most effective nondestructive inspection and is practical on a routine basis. . . .Riveting may be in the way of making amends to city dwellers, as one New York builder predicts (Page 25) that within a year a silencer will be used on urban construction work. . . . Both processes will benefit if the radioed advice (Page 38) of the president of the National Machine Tool Builders' association to replace obsolete machinery as a means of breaking the vicious cycle of delayed purchases is heeded.

## Operating Economies Command Premium

Reduced earnings make economies doubly valuable, but curtailed operations also make them doubly difficult. Blast furnace engineers in Germany have devised a method (Page 41) whereby it is possible to recover flue dust and blow it back into stack by compressed blast furnace gas. . . . Such economies promote exports in highly competitive foreign markets, government reports noting moderate increases (Page 19) in both exports and imports in March.

# Continental's Reorganization To Bring Merger Accord?

PLACING of four bank presidents on the board of Continental Shares Inc., a Cleveland investment trust with large stock holdings in Middle West steel corporations, simultaneous with the retirement of Cyrus S. Eaton as its chairman is primarily a financial expedient, but is believed by the steel industry to be charged with great importance for it.

From Mr. Eaton and his associates has originated the opposition to the merger of the Bethlehem Steel Corp. and the Youngstown Sheet & Tube Co. —opposition which was unsuccessful within the Sheet & Tube company but successful thus far in the courts. No small portion of the dissenting Sheet & Tube stock is included in the Continental Shares portfolio.

At Youngstown, April 28, Mr. Eaton and the other three directors representing his minority interest—H. B. Wick, S. Livingston Mather and George C. Brainard—were re-elected to the board of Sheet & Tube. This prompted a report at Youngstown that opposition to the Bethlehem-Sheet & Tube merger may be withdrawn and the consolidation, based on a new offer from Bethlehem, carried to completion.

**New Proposal Is Possible**

In the steel trade generally it is believed that reorganization of Continental Shares is certain not to accentuate its opposition to the Bethlehem-Sheet & Tube merger and might modify it. The position of the trust is likely to be reviewed, and a course charted which is based not upon a local situation but dictated by a desire to compose differences and restore harmony.

In this event, it is believed that the present merger proceedings would be terminated, and the appeal of the pro-merger forces from the Jenkins decision dropped. A new proposal would be submitted by Bethlehem, predicated upon present-day market values of the stocks of the two corporations. Such an arrangement might give force to recent reports that a consolidation embracing other independents than the two mentioned might be undertaken.

The personal interests of Mr. Eaton and his associates in Continental Shares and in the various steel companies in which they have operated are understood not to be changed by the Continental reorganization.

The presidents of the Union Trust Co., Cleveland Trust Co. and Guardian Trust Co. and the chairman of the Central United National Bank, all of Cleveland, take places on Continental Shares board, coincident with the retirement of Mr. Eaton, Philip Wick, M. J. Mandelbaum and W. R. Burwell, the latter continuing as vice president instead of president. George T. Bishop, Cleveland-New York public utility and railroad executive, becomes president.

**Holds Youngstown Certificates**

As of Dec. 31, 1930, the portfolio of Continental Shares listed 349,554 common shares of Cliffs Corp., 508 voting trust certificates of Cliffs Corp., 209,409 common shares of Republic Steel Corp., 62,796 certificates of deposit of Youngstown Sheet & Tube Co., 4100 unstamped common shares of Youngstown Sheet & Tube Co., 3243 common shares of Wheeling Steel Corp., 2017 common shares of Interlake Steamship Co., 3200 common shares of Eaton Axle & Spring Co., 950 shares of Perfection Stove Co. and 40,000 common shares of the Harbison-Walker Refractories Co.

Syndicate participation of Continental Shares in unstated iron and steel companies as of last Dec. 31 totaled $520,681.72. The trust also owned preferred stock of the Cleveland-Cliffs Iron Co. valued at $252,471.67.

## Look for Merger Soon

New York—Acquisition of at least three northern New Jersey structural steel fabricators — probably Hay Foundry & Iron Works, Newark, N. J.; Hedden Iron Construction Co., Hillside, N. J., and Levering & Garrigues Co., Dunnellen, N. J.—may be announced following the quarterly meeting of the Bethlehem Steel Corp., April 30.

## Bethlehem Is Proposed Buyer of Eastern Steel

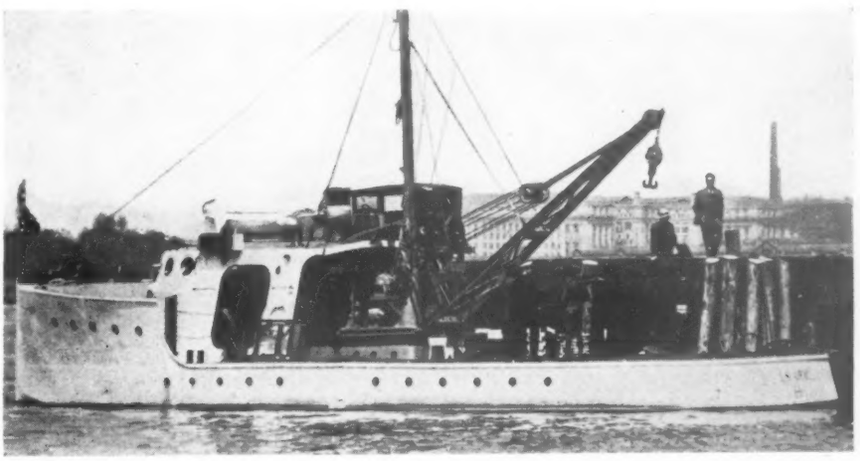
Bethlehem, Pa.—The Bethlehem Steel Co. confirms that it has acquired substantially all of the bonds of the Eastern Steel Co., Pottsville, Pa., and expects to acquire title to the physical properties under the bid made by Alexander Luria, of Luria Bros. & Co., Reading, Pa., subject to confirmation by the United States district court at Philadelphia.

Bethlehem is not acquiring these properties to operate but intends to remove the useful machinery and equipment to one or more Bethlehem plants. Luria Bros. were high bidders at $500,000 for the plant and equipment and $12,500 for material in stock.

The plant, closed since Feb. 28, consists of six open-hearth furnaces and several structural mills.

## Tutein in Bankruptcy

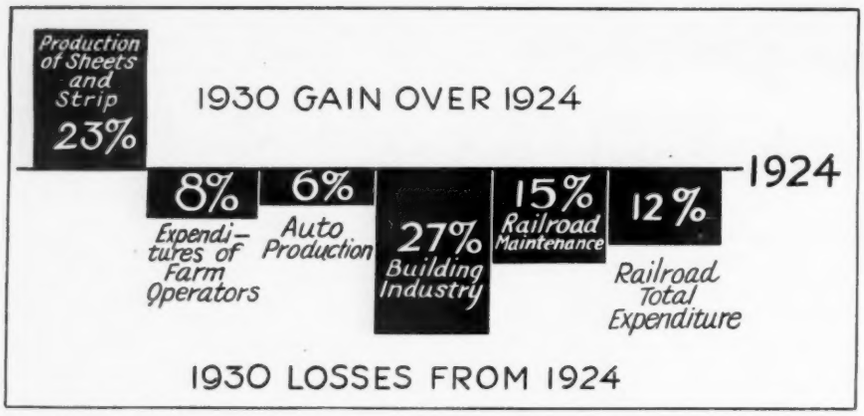
Boston—E. Arthur Tutein Inc. has filed a bankruptcy petition in federal court here with liabilities of $444,000 and assets of $250,000. A friendly receivership is understood to have been instituted some time ago pending the suit against the Hudson Valley Coke & Products Corp., Troy, N. Y., in which Tutein recently was awarded $335,000.



*Keystone Photo*

*ALL-WELDED BOAT BUILT FOR ARMY PLANE RESCUE WORK*

*The H-I, a 64-foot craft, is the first boat ever built for the army or navy with the frames and plates fabricated entirely by welding. It is reported that not a rivet can be found in the hull. While designed for airplane rescue in Panama waters, it also can be used for cargo and general derrick work*




*Despite a reduction in activities in important consuming industries in 1930, compared with 1924, production of sheets and strip advanced 23 per cent*

# Flat-Rolled Steel Industry Scans Market Progress

PRODUCTION of steel sheets and strip in the United States in 1929 increased 83 per cent over 1924, this gain being many times the improvement in the general activity of the various industries consuming these products.

In distressed 1930, when these major markets for sheets and strip were, without exception, falling short of their 1924 levels, sheet and strip output recorded an actual advance of 23 per cent.

These encouraging comparisons, depicted in the accompanying graphs, were to provide the background for considerable discussion at White Sulphur Springs, W. Va., April 30 to May 2, when about 100 executives were to attend the annual meeting of the National Association of Flat-Rolled Steel Manufacturers.

Per capita consumption statistics also were to be supplied to show the progress of market effort:

| | 1924 | 1929 | 1930 | % Gain 1930 over 1924 |
|---|---|---|---|---|
| All steel products ... | 746 | 1,040 | 754 | 1.1 |
| Sheets ..... | 90 | 154 | 103 | 14.2 |

In 1924, it was to be pointed out, the expenditure for national advertising by steel mills and manufacturers of fabricated steel products was $2,000,000. This sum was tripled, approximately, in 1929 and again in 1930.

On the program of speakers to address the steel executives are Magnus Alexander, president, National Industrial Conference board, New York; W. E. Humphrey, member, federal trade commission; C. I. Auten, Truscon Steel Co., Youngstown, O.; R. H. Norton, president, Acme Steel Co., Chicago, Charles Eshleman, president, Griswold-Eshleman Co., Cleveland, and T. D. McCloskey, attorney, Pittsburgh.

Mr. Conger was to summarize the outlook for flat-rolled steel in the building industry and Mr. Gifford was to present an analysis of the market for steel sheets and strips in the Chicago territory.

As advertising counsellor for the trade extension division of the National Association of Flat-Rolled Steel Manufacturers, Mr. Eshleman was to review the benefits to the steel industry of advertising the many advantages to be found in the use of products fabricated from flat-rolled steel.

## Mechanical Engineers Make Nominations

Conrad N. Lauer, president, Philadelphia Gas Works, Philadelphia, has been nominated for president of the American Society of Mechanical Engineers for 1932.

Nominees for vice president, as announced by the nominating committee during the society's semiannual meeing in Birmingham, April 2-23, were: Robert M. Gates, vice president, Superheater Co., New York; Charles M. Allen, professor of hydraulic engineering, Worcester Polytechnic institute, Worcester, Mass.; Fred H. Dorner, mechanical engineer, Milwaukee; and William B. Gregory, professor of experimental engineering, Tulane university, New Orleans.

For managers the committee named Alexander J. Dickie, editor, *Pacific Marine Review*, San Francisco; Eugene W. O'Brien, editor, *Southern Power Journal*, Atlanta, Ga.; and Harry R. Westcott, president, Westcott & Mapes Inc., New Haven, Conn.

Election will be by letter ballot, closing Sept. 22.

## Iron and Steel Institute Announces Papers

The American Iron and Steel institute has announced the following papers to be read at its annual spring meeting at the Commodore hotel, New York, May 22:

"Co-operative Research in the Iron and Steel Industry," by F. N. Speller, director, department of metallurgy and research, National Tube Co., Pittsburgh.

"Shipbuilding and Its Relation to the Steel Industry," by H. Gerrish Smith, vice president, Bethlehem Shipbuilding Corp. Ltd., New York.

"An Appraisal of Nitriding," by Marcus A. Grossmann, vice president, Republic Research Corp., Massillon, O.

"A Thermal Study of an Open-Hearth Furnace," by William M. Henry, chief engineer, Newburgh works, American Steel & Wire Co., Cleveland, and Thomas J. McLoughlin, fuel engineer, Duquesne works, Carnegie Steel Co., Duquesne, Pa.

"Corrosion-Resistant Alloys of the Stainless Type in Use and Fabrication," by T. Holland Nelson, consulting metallurgist, Midvale Co., Philadelphia.

"A Review of Certain Gas Producer Practice," by Victor Windett, manager, gas producer gas division, Wellman Engineering Co., Cleveland.

## Steel Founders Say Business Outlook Fair

Steel foundry business was reported fair in March with 42 of 60 foundries which are members of the Steel Founders' Society of America Inc., New York. These 42 have 24,510 tons capacity of the total 40,102. The rest were divided between five plants reporting good business, 13 poor.

Members said present rate of inquiry was steady in large part, but actual bookings are largely below 50 per cent of capacity and in consequence operations reflect closely the latter.

## Buys Jersey City Plant

New York—Tidewater Steel Co., Hagerstown, Md., has taken over the warehouse equipment of the Kalman Steel Co., Chicago, at Jersey City, N. J., and is operating this reinforcing bar fabricating plant with the same personnel. George W. Artwright is in charge.

It is understood that the Kalman warehouse at Philadelphia is on the market.

# U. S. Steel Holds Dividend Despite Profitless Quarter

UNITED STATES STEEL CORP. declared on April 28 its regular quarterly dividends of $1.75 each on the common and preferred, in spite of adverse earnings for the first quarter of 1931, when net profit before dividends was $6,765,057.

Dividends paid during the first quarter totaled $21,528,297, leaving a deficit for the quarter of $14,763,240, compared with a surplus of $14,491,355 in the same period of 1930.

Total earnings were $19,464,836 for the three months and revealed a progressive monthly betterment. The total for the corresponding 1930 period was $49,615,397. Charges of $11,325,302 for depreciation and depletion and bond interest brought the balance down to $6,765,057. No special income was added in the first quarter, this figure in 1930 representing a quarterly apportionment of net interest on federal tax refunds.

The common dividend is payable June 29 to record June 1; the preferred dividend is payable May 29 to holders as of May 2. Accompanying tables show comparisons of quarterly income accounts and statement of total earnings by months.

## Steel Corporation's Quarterly Report Summarized

| | First Quar. 1931 | Fourth Quar. 1930 | First Quar. 1930 |
|---|---|---|---|
| Total earnings | $19,464,836 | $23,083,791 | $49,615,397 |
| Less depreciation, depletion, etc. | 11,325,302 | 13,003,439 | 14,813,529 |
| Net income | 8,139,534 | 10,080,352 | 34,801,868 |
| Less bond interest | 1,374,477 | 1,409,690 | 1,420,697 |
| Balance | 6,765,057 | 8,670,662 | 33,381,171 |
| Add special income* | ..... | 3,695,426 | 2,396,636 |
| Total | 6,765,057 | 12,366,088 | 35,777,807 |
| Dividends | | | |
| Preferred | 6,304,919 | 6,304,920 | 6,304,919 |
| Common | 15,223,378 | 15,206,065 | 14,981,533 |
| Surplus | †14,763,240 | †9,144,897 | 14,491,355 |

*Quarterly apportionment of net interest on federal tax refunds.
†Deficit.

## J & L Reports Deficit

Jones & Laughlin Steel Corp., Pittsburgh, reports for first quarter after all charges including depreciation, taxes and interest, a deficit of $190,982 against net income in the preceding quarter of $283,754 and net of $3,555,009 in the first quarter of 1930.

Deficit after dividends in the first quarter was $1,794,795, compared with $1,464,139 in the preceding quarter and surplus of $1,807,116 a year ago. Total earnings for the first quarter before depreciation and depletion were $1,181,392, against $5,092,356 in the corresponding period of 1930.

□ □ □

Inland Steel Co., Chicago, had net profit of $633,837 after depreciation, depletion and taxes in the first quarter, equal to 52 cents a share, compared with $2,721,318, or $2.27 a share in the first quarter of 1930. Quarterly dividend of 62½ cents was declared payable June 1 to record May 15, thus placing the stock on a $2.50 annual basis against $4 previously.

□ □ □

Colorado Fuel & Iron Co., Denver, had deficit of $247,214 for first quarter after all deductions except federal tax. This compares with profit of $1,294,158 for the corresponding 1930 period before deduction for equipment dismantled.

□ □ □

Gulf States Steel Co., Birmingham, Ala., reports loss of $217,041 for the first quarter, comparing with a net profit of $94,902 for the first quarter of 1930.

□ □ □

Newton Steel Co., Youngstown, O., reports net loss of $67,943 for the March quarter after all charges, which compares with net profit of $287,518 for March quarter 1930.

□ □ □

A. M. Byers Co., Ambridge, Pa., had net income of $49,255 in the first quarter compared with $331,501 in the like quarter of 1930.

□ □ □

M. A. Hanna Co., Cleveland, reports consolidated net corporate income of $336,267 for the March quarter, compared with $389,219 in the first quarter of 1930.

□ □ □

Changes by the Colorado Fuel & Iron Co., Denver and Pueblo, Colo., will result in a capital structure of 20,000 preferred shares at $100 par and 442,000 shares of no-par common. Of the new common 340,505 shares will be exchanged share for share for the old common, the remainder being unissued. The new, issued common will be listed on the company's books at $8,512,625. Bonded indebtedness of subsidiaries has been reduced from $49,400,000 to $32,258,000.

## Monthly Earnings of United States Steel Corp.

| | 1931 | 1930 | 1929 |
|---|---|---|---|
| January | $6,118,411 | $15,404,359 | $18,759,098 |
| February | 6,155,548 | 16,107,410 | 19,080,941 |
| March | 7,190,877 | 18,103,628 | 22,265,342 |
| First quarter | 19,464,836 | 49,615,397 | 60,105,381 |
| April | ..... | 16,113,583 | 22,361,428 |
| May | ..... | 16,570,790 | 25,604,641 |
| June | ..... | 14,376,931 | 24,029,392 |
| Second quarter | ..... | 47,061,304 | 71,995,461 |
| First Half | ..... | 96,676,701 | 132,100,842 |
| July | ..... | 13,479,870 | 24,303,058 |
| August | ..... | 13,000,496 | 24,687,088 |
| September | ..... | 11,514,933 | 21,183,566 |
| Third quarter | ..... | 37,995,299 | 70,173,713 |
| Nine months | ..... | 134,672,000 | 202,274,555 |
| October | ..... | 10,943,449 | 22,066,325 |
| November | ..... | 7,949,384 | 18,367,105 |
| December | ..... | 4,190,958 | 66,014,467 |
| Fourth quarter | ..... | 23,083,791 | 56,447,897 |
| Year | ..... | $157,755,791 | $258,722,453 |

# Prices of Cold-Rolled Sheets Are Announced Under New Classification

PRICES of cold-rolled sheets under the new classification have been announced by the American Rolling Mill Co., Middletown, O., and several other producers that have adopted the plan. No announcement has been made regarding prices of hot-rolled or hot-rolled annealed sheets, the other two main classifications, but they are expected before May 1, when the plan goes into effect.

The Newton Steel Co. and the Otis Steel Co. are among those companies which have taken definite action. It is reliably reported that the American Sheet & Tin Plate Co. is preparing to take a similar course. Other producers are studying the plan; at Chicago it is reported some modification is contemplated.

Most independent nonintegrated sheet mills in the Youngstown district have strongly intimated their purpose to follow after the larger interests have indicated their course.

Prices announced April 28 by the Middletown, O., producer conform closely to present market levels on comparable grades, with some gages and qualities slightly higher and some slightly lower than existing levels. The Pittsburgh base prices are as follows, with the usual differentials of 10 and 15 cents, respectively, applying at Gary, Ind., and Chicago, delivered:

Heavy cold-rolled, No. 10 base, 24 inches and wider; 16 gage and heavier; 2.35c.

Cold-rolled, No. 20 base, 24 inches and wider, 17 gage and lighter: 2.95c.

Heavy furniture sheets, No. 10 base, 24 inches and wider, 16 gage and heavier, stretcher leveled, not resquared: 2.75c.

Furniture sheets, No. 20 base, 24 inches and wider, 17 gage and lighter, stretcher leveled, not resquared; 3.35c.

Autobody sheets, No. 20 base, 24 inches and wider: 3.10c.

### Hot-Rolled Prices Later

While no price announcement has been made on the hot-rolled classification it is believed hot-rolled annealed sheets will be about 2.40c to 2.50c, base, Pittsburgh, with the usual differentials at Gary and Chicago.

The complete table of base grades and extras was published in the April 23 issue of STEEL, page 24.

Embodied in the Rolling Mill company's announcement are new quotations on carload lots of its ingot iron sheets. On grades of iron sheets corresponding to cold-rolled for the enameling quality No. 10 base will be 3.10c and No. 20 base, 3.60c, Pittsburgh.

Some question has been raised as to how the new classifications will affect the wage scales in those mills having contracts with the Amalgamated Association of Iron, Steel and Tin Workers. The present contracts expire June 30. No difficulties are anticipated in adjusting the wage scales to the new base. The association is holding its annual convention at Reading, Pa. A number of the independent sheet mills still have arrangements with the association.

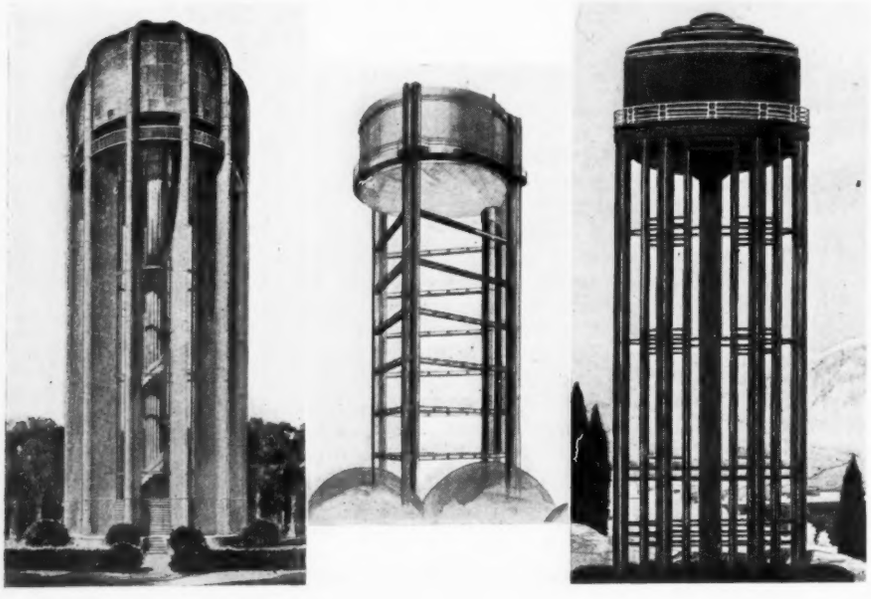
## Bar Iron Mill Wage Rates Are Unchanged

Wages rates in bar iron mills having contracts with the Amalgamated Association of Iron, Steel and Tin Workers will remain unchanged for May and June, puddlers receiving $10.30 a ton, the rate in effect since Jan. 1, 1931. The average sales price in March and April was 1.70c per pound. Further comparisons:

| | 1931 | 1930 | 1929 |
|---|---|---|---|
| Jan.-Feb. | 1.70c | 1.95c | 2.00c |
| March-April | 1.70c | 1.90c | 2.00c |
| May-June | ..... | 1.90c | 2.00c |
| July-Aug. | ..... | 1.80c | 2.00c |
| Sept.-Oct. | ..... | 1.80c | 2.00c |
| Nov.-Dec. | ..... | 1.70c | 2.00c |
| Yearly average. | | 1.841c | 2.00c |

# More Ornate Appearance Features Prize Water Tank Designs

THAT overhead water tanks of the future will be more pleasing in appearance is suggested in the 152 final designs submitted in the contest sponsored by the Chicago Bridge & Iron Works, Chicago, to develop an aesthetic improvement in the character of these tanks. Prizes totaling $4000 were offered in the competition, which covered a period of 20 months and attracted 691 participants from the United States and foreign countries.



First, second and third prize designs are shown from left to right in the order named in the accompanying illustration. First prize of $2000 was given to Eugene Voita, Chicago; second prize of $1000 to F. D. Chapman and C. M. Goldman, Associated, Evanston, Ill.; and third prize of $500 to Howard W. Vader, Chicago.

Honorary mentions, carrying prizes of $100 each, were awarded to Donald A. Blake, Chicago; George A. Hossack, Chicago; Ossip Klarwein and Fritz Hoger, Hamburg, Germany; Mary Ann E. Crawford, Chicago; and Samuel E. Homsey, Cambridge, Mass.

The jury of award consisted of R. W. Zimmerman, architect, chairman; Howard L. Cheney, president, Chicago chapter of American Institute of Architects; and George T. Horton. Albert M. Saxe, architect, served as professional advisor.

The drawings will be upon public exhibition in Chicago for two weeks commencing April 27, at 430 Michigan avenue, seventh floor. Subsequent exhibitions will be arranged at universities and architectural schools.

# Steel Exports and Imports Rise Moderately in March

FOREIGN trade of the United States in iron and steel products rose 18,300 gross tons to total of 109,512 tons in March, the highest total for any month since November of 1930, and breaking the steadily downward trend observable in this trade since that month. The March daily average export movement was, of course, greater than that of February—3533 tons compared with 3258 tons, while 24 of the 46 classes of products included in this trade showed individual gains, according to the iron and steel division, department of commerce.

The import trade likewise returned a notable gain of 12,356 tons, bringing the total for March up to 40,401 tons, compared with 28,045 tons in February. Increases in the import trade were three times as numerous as were decreases.

March shipments to Canada totaled 55,760 tons and included 11,031 tons of scrap, 10,465 tons of plain structural shapes, and 7818 tons of skelp. Trade with Japan of 8225 tons included 2426 tons of scrap and 2247 tons of tin plate.

Iron ore imports, 169,271 tons, were much larger than in February when only 94,529 tons were received. Imports of this commodity included 85,133 tons from Chile, 30,184 tons from Russia, 22,904 tons from Sweden, and 11,500 tons from Cuba. Manganese imports were 1710 tons.

**IMPORTS AND EXPORTS**
**Gross Tons**

| | 1931 Imports | 1931 Exports | 1930 Imports | 1930 Exports |
|---|---|---|---|---|
| Jan. | 40,781 | 92,745 | 43,624 | 223,766 |
| Feb. | 28,045 | 91,212 | 43,326 | 197,225 |
| March | 40,401 | 109,512 | 56,618 | 238,329 |
| (3 mos.) | 109,227 | 293,469 | 143,568 | 659,435 |
| April | ..... | ..... | 53,686 | 208,604 |
| May | ..... | ..... | 54,315 | 195,425 |
| June | ..... | ..... | 48,953 | 159,273 |
| July | ..... | ..... | 39,083 | 131,580 |
| Aug. | ..... | ..... | 35,405 | 150,922 |
| Sept. | ..... | ..... | 40,285 | 131,045 |
| Oct. | ..... | ..... | 38,344 | 131,845 |
| Nov. | ..... | ..... | 43,098 | 111,979 |
| Dec. | ..... | ..... | 40,754 | 101,992 |
| Total | ..... | ..... | 537,491 | 1,981,985 |

**ORIGIN OF MARCH IMPORTS**
**Gross Tons**

| | Steel Ingots, Blooms | Steel Scrap | Cast Iron Pipe | Steel Bars |
|---|---|---|---|---|
| Austria | 12 | ..... | ..... | 8 |
| Belgium | 1,791 | ..... | 159 | 2,321 |
| Canada | 3 | 1,277 | ..... | 4 |
| Czecho-Slovakia | ..... | ..... | ..... | 18 |
| France | 177 | ..... | 429 | 1,026 |
| Germany | 168 | ..... | ..... | 567 |
| Mexico | ..... | 3 | ..... | ..... |
| Norway | ..... | ..... | ..... | 2 |
| Sweden | 44 | 68 | ..... | 159 |
| United Kingdom | 104 | ..... | ..... | 1,028 |
| Total | 2,299 | 1,348 | 588 | 5,133 |

**IMPORTS OF IRON AND STEEL PRODUCTS**
**Gross Tons**

| | March 1931 | Feb. 1931 | March 1930 |
|---|---|---|---|
| Pig iron | 7,357 | 3,456 | 12,182 |
| Sponge iron | ..... | 107 | |
| Ferromanganese, spiegeleisen (1) | 3,022 | 2,497 | 6,021 |
| Ferrochrome (2) | 21 | ..... | ..... |
| Ferrosilicon (3) | 65 | 38 | 758 |
| Scrap | 1,348 | 415 | 2,563 |
| Ingots, blooms | 2,299 | 1,967 | 1,449 |
| Concrete bars | 3,944 | 3,110 | 3,504 |
| Hollow bar, drill steel | 187 | 67 | |
| Merch. steel bars | 5,133 | 3,432 | |
| Iron slabs | ..... | ..... | |
| Iron bars | 73 | 34 | 185 |
| Wire rods | 455 | 1,038 | 1,355 |
| Boiler, other plate | 480 | 27 | 306 |
| Sheets, skelp | 2,362 | 2,087 | 3,929 |
| Tin plate | 12 | 4 | 6 |
| Structural shapes | 6,938 | 4,341 | 18,102 |
| Sheet piling | ..... | 90 | |
| Rails, fastenings | 113 | 450 | 721 |
| Cast pipe, fittings | 588 | 3 | 366 |
| Welded pipe | 1,076 | 305 | 379 |
| Other pipe | 866 | 1,280 | 1,232 |
| Barbed wire | 502 | 403 | 312 |
| Round iron | 195 | 389 | 485 |
| Flat wire, strip | 65 | 63 | 132 |
| Wire rope, strand | 247 | 89 | 225 |
| Other wire | 96 | 73 | 64 |
| Hoops and bands | 1,841 | 1,248 | 1,721 |
| Nails, tacks | 676 | 625 | 444 |
| Bolts, nuts, rivets | 167 | 92 | 22 |
| Castings & forgings | 137 | 162 | 155 |
| Total | 40,401 | 28,045 | 56,618 |

(1) Manganese content.
(2) Chromium content.
(3) Silicon content.

**DESTINATION OF MARCH IRON AND STEEL EXPORTS**
**Gross Tons**

| | Galvanized steel sheets | Tin terne plate | Black sheets | Steel bars |
|---|---|---|---|---|
| Argentina | 6 | 255 | 79 | ..... |
| Brazil | 417 | 68 | ..... | 40 |
| Canada | 489 | 501 | 4,738 | 2,634 |
| Central Amer. | 203 | 3 | 4 | 72 |
| Chile | 18 | 122 | 10 | 945 |
| China | 207 | 943 | 110 | 75 |
| Colombia | 135 | 43 | 3 | 6 |
| Cuba | 187 | 702 | 22 | 58 |
| Dutch East Indies | 336 | 151 | 2 | ..... |
| Finland | ..... | ..... | ..... | ..... |
| France | ..... | ..... | 1,409 | ..... |
| Greece | 21 | 99 | ..... | ..... |
| Italy | ..... | ..... | 183 | ..... |
| Japan | 1 | 2,247 | 244 | 1 |
| Java | 120 | ..... | 5 | ..... |
| Mexico | 475 | 1,427 | 103 | 16 |
| Norway | 20 | ..... | ..... | ..... |
| Panama | 29 | 1 | ..... | 503 |
| Philippines | 1,574 | 505 | 660 | 143 |
| Peru | 217 | 518 | 4 | 212 |
| Soviet Russia | ..... | ..... | ..... | 71 |
| Turkey | ..... | ..... | ..... | ..... |
| United Kingdom | ..... | ..... | 160 | 974 |
| Uruguay | 86 | 147 | 29 | ..... |
| Venezuela | 141 | 10 | 2 | 18 |
| Total | 4,805 | 8,522 | 7,973 | 5,823 |

**ORIGIN OF MARCH IMPORTS**
**Gross Tons**

| | Iron Ore | Pig Iron | Manganese | Ferro-manganese |
|---|---|---|---|---|
| Algeria | 4,500 | ..... | ..... | ..... |
| Brazil | ..... | ..... | 1,060 | ..... |
| British India | ..... | 3,787 | 650 | ..... |
| Canada | 9 | ..... | ..... | 1,424 |
| Chile | 85,133 | ..... | ..... | ..... |
| Cuba | 11,500 | ..... | ..... | ..... |
| Italy | ..... | ..... | ..... | 29 |
| Kwantung | ..... | 355 | ..... | ..... |
| Mexico | 219 | ..... | ..... | ..... |
| Morocco | 7,680 | ..... | ..... | ..... |
| Norway | 7,112 | 35 | ..... | 598 |
| Netherlands | ..... | 1,285 | ..... | ..... |
| Russia | 30,184 | ..... | ..... | ..... |
| Sweden | 22,904 | 1,102 | ..... | ..... |
| United Kingdom | 30 | 793 | ..... | 971 |
| Total | 169,271 | 7,357 | 1,710 | 3,022 |

**EXPORTS OF IRON AND STEEL PRODUCTS**
**Gross Tons**

| Item | March 1931 | Feb. 1931 | March 1930 |
|---|---|---|---|
| Pig iron | 324 | 606 | 1,742 |
| Ferromanganese, spiegeleisen | ..... | 13 | 1,394 |
| Scrap (including (tin plate scrap) | 16,946 | 10,690 | 49,679 |
| Ingots, blooms | 462 | 503 | 2 101 |
| Bars, iron | 84 | 124 | 103 |
| Bars, steel | 5,823 | 5,190 | 9,836 |
| Bars, alloy steel | 453 | 768 | 1,109 |
| Wire rods | 3,594 | 3,363 | 4,684 |
| Boiler plate, not fabr. | 6,243 | 5,571 | 13,653 |
| Skelp | 7,318 | 4,944 | 17,001 |
| Iron sheets, galv. | 1,002 | 435 | 459 |
| Steel sheets, galv. | 4,805 | 3,219 | 12,362 |
| Steel sheets, black | 7,973 | 7,447 | 13,959 |
| Iron sheets, black | 431 | 527 | 1,195 |
| Hoops, bands, strip | 3,778 | 3,797 | 6,331 |
| Tin, terne plate | 8,522 | 7,752 | 23,000 |
| Shapes, not fabr. | 11,440 | 8,514 | 16,775 |
| Structural shapes and plates, fabricated | 3,573 | 3,549 | 5,519 |
| Metal lath | 247 | 166 | 429 |
| Rails | 3,724 | 5,133 | 8,668 |
| Rail fastenings | 1,099 | 446 | 1,917 |
| Boiler tubes | 763 | 661 | 1,543 |
| Casing and pipe, seamless and welded | 1,592 | 2,321 | 8,711 |
| Malleable screwed pipe fittings | 489 | 586 | 990 |
| Cast-iron screwed pipe fittings | 208 | 477 | 835 |
| Cast-iron pressure pipe and fittings | 825 | 1,152 | 824 |
| Cast-iron soil pipe and fittings | 1,115 | 584 | 3,441 |
| Welded black, galv. steel pipe | 3,467 | 3,621 | 7,673 |
| Welded black, galv. wrought pipe | 561 | 193 | 1,437 |
| Plain black or galv. wire | 1,101 | 1,162 | 2,729 |
| Barbed wire, woven-wire fencing | 2,163 | 2,179 | 3,319 |
| Woven-wire screen cloth | 433 | 99 | 136 |
| Wire rope | 272 | 276 | 295 |
| Insulated wire, cable | 25 | 33 | 111 |
| Other wire | 401 | 471 | 743 |
| Wire nails | 670 | 561 | 853 |
| Tacks | 29 | 35 | 40 |
| Bolts, nuts, rivets | 519 | 434 | 977 |
| Iron castings | 489 | 651 | 653 |
| Steel castings | 450 | 718 | 1,293 |
| Car wheels, axles | 906 | 234 | 1,621 |
| Steel forgings | 885 | 806 | 878 |
| Total | 109,512 | 91,212 | 238,329 |

## March Auto Output, Up 26 Per Cent, Best Since June

Automobile production in March increased 26 per cent over February —the normal March upturn—providing the best month's total since June, 1930. First quarter output, totaling 668,131 units, was about 67 per cent of the opening quarter of 1930. Department of commerce comparisons follow:

| | —United States— | | | Canada |
|---|---|---|---|---|
| 1930 | Total | Passenger cars | Trucks | Total |
| Mar. | 396,388 | 331,973 | 62,994 | 20,730 |
| (3 mo.) | 1,000,023 | 848,195 | 148,589 | 46,666 |
| Apr. | 444,024 | 375,685 | 67,853 | 24,257 |
| May | 420,027 | 364,512 | 55,075 | 24,672 |
| June | 334,506 | 288,481 | 45,562 | 15,090 |
| July | 265,533 | 224,690 | 40,467 | 10,188 |
| Aug. | 224,368 | 185,619 | 38,363 | 9,792 |
| Sept. | 220,649 | 177,752 | 41,967 | 7,957 |
| Oct. | 154,401 | 115,476 | 38,343 | 4,541 |
| Nov.* | 135,754 | 102,358 | 33,787 | 5,407 |
| Dec. | 155,701 | 122,748 | 31,528 | 5,622 |
| (Year)* | 3,355,986 | 2,805,516 | 541,534 | 154,192 |
| 1931 | | | | |
| Jan.* | 171,851 | 137,805 | 33,534 | 6,496 |
| Feb. | 219,939 | 179,890 | 39,520 | 9,871 |
| Mar. | 276,341 | 230,835 | 45,096 | 12,993 |
| (3 mo.) | 668,131 | 548,530 | 118,150 | 29,360 |

*Revised.

## Mechanical Stokers' Sale Declines During March

Sixty-three stokers of 17,993 horsepower were sold in March, compared with 67 units of 14,249 horsepower in February, according to reports of 11 leading makers to the department of commerce. Monthly statistics follow:

| | Stokers sold | Fire tube boilers | Water tube boilers |
|---|---|---|---|
| 1930 | | | |
| March | 89 | 45 | 44 |
| (3 mos.) | 215 | 95 | 120 |
| April | 108 | 46 | 62 |
| May | 96 | 41 | 55 |
| June | 151 | 70 | 81 |
| July | 150 | 83 | 67 |
| August | 115 | 61 | 54 |
| September | 128 | 71 | 57 |
| October | 92 | 46 | 46 |
| November | 71 | 41 | 30 |
| December | 53 | 35 | 18 |
| (Year) | 1,179 | 589 | 590 |
| 1931 | | | |
| January | 85 | 40 | 45 |
| February | 67 | 37 | 30 |
| March | 63 | 27 | 36 |
| (3 mos.) | 215 | 104 | 111 |

## Machine Tool Orders Improve During March

March orders for machine tools reflect seasonal activity in the machine tool business. The C group of smaller companies made the best showing as to percentage increase in orders, with March volume ahead of the average per month for 1930. Shipments in March were stepped up and the index of unfilled orders reflects improvement. Following, however, by the National Machine Tool Builders' association, shows index of actual orders by months:

| 1930 | *Index A | *Index B | *Index C | Total |
|---|---|---|---|---|
| March | 174.8 | 191.7 | 240.0 | 181.2 |
| April | 171.4 | 199.5 | 200.3 | 179.1 |
| May | 119.5 | 182.5 | 145.6 | 135.1 |
| June | 121.8 | 132.7 | 162.2 | 125.8 |
| July | 78.4 | 124.4 | 132.9 | 91.1 |
| Aug. | 102.4 | 153.9 | 119.1 | 113.8 |
| Sept. | 129.7 | 138.8 | 215.9 | 135.9 |
| Oct. | 81.3 | 112.3 | 118.1 | 90.1 |
| Nov. | 56.0 | 67.8 | 96.6 | 60.4 |
| Dec. | 58.4 | 92.7 | 126.6 | 68.8 |
| (Year's Average) | 119.8 | 146.4 | 164.7 | 127.8 |
| 1931 | | | | |
| Jan. | 64.6 | 75.1 | 68.6 | 66.9 |
| Feb. | 68.3 | 129.8 | 93.1 | 83.7 |
| March | 109.2 | 133.4 | 180.9 | 117.6 |

*Note—Index A, base over $50,000; Index B, bases $10,000 to $50,000; Index C, base less than $10,000. Base: average shipments for years 1922-23-24. Totals: The total of all reports is not an average of A, B and C, but the sum of each item in percentage of the total base.

## River Shipments From Pittsburgh District Increase

River shipments of iron and steel products in the Pittsburgh district increased sharply during March but were smaller than a year ago. The movement for the first quarter was little changed from 1930, amounting to 493,584 tons against 500,255 tons in the first quarter of 1930. Comparisons follow, showing March Ohio river tonnage to be the highest since October of 1930:

| 1930 | Allegheny | Monongahela | Ohio |
|---|---|---|---|
| March | 100 | 111,702 | 109,911 |
| (3 mos.) | 410 | 250,813 | 249,032 |
| April | 1,000 | 70,229 | 66,482 |
| May | ..... | 117,942 | 128,502 |
| June | 700 | 137,603 | 144,099 |
| July | 1,125 | 132,161 | 147,558 |
| August | 2,600 | 96,498 | 107,948 |
| Sept. | 5,100 | 106,079 | 109,129 |
| Oct. | 11,490 | 105,451 | 138,109 |
| Nov. | 17,850 | 75,202 | 95,644 |
| Dec. | 3,800 | 46,972 | 50,403 |
| (Year) | 44,075 | 1,133,950 | 1,236,906 |
| 1931 | | | |
| Jan. | 50 | 90,405 | 88,089 |
| Feb. | ..... | 58,847 | 75,264 |
| March | ..... | 76,137 | 104,792 |
| (3 mos.) | 50 | 225,389 | 268,145 |

## Coke Production Continues Upward Trend in March

Upward trend of coke production continued in March, notwithstanding a slight decline in beehive output. Total production of by-product in March amounted to 3,256,289 tons, compared with 2,897,866 in February. Eighty-eight plants operated during the month and produced at about 63 per cent capacity, according to the department of commerce. Month's figures follow:

(In net tons)

| | By-product coke | Beehive coke | Total coke |
|---|---|---|---|
| 1930 | | | |
| March | 4,393,696 | 290,700 | 4,684,396 |
| 1931 | | | |
| March | 3,256,289 | 149,300 | 3,405,589 |

## Schwab Says Wage Rates Should Be Maintained

New York—The advance in industrial machinery has reduced the labor cost per item and made it possible to maintain wage rates even when commodity prices are severely depressed, said Charles M. Schwab, chairman, Bethlehem Steel Corp., in a recent address.

"Many leading corporations," declared Mr. Schwab, "have maintained payroll forces and wages by adjustments and transfers. In small business the protection of the job for the workers is more difficult; in previous recessions no large-scale attempts of this nature have been made.

"It is my hope and expectation that nothing will develop which will compel the taking of a backward step. The new policies in mitigation of distress and provisions for at least a minimum purchasing power in our industrial population have been a favorable factor of progress in the present situation."

## Space Reservations for Metal Show Encouraging

Reservation for space in the 1931 National Metal exposition, to be held in Commonwealth Pier, Boston, Sept. 21-25, at the present are equaling and in some cases surpassing those of the last four years, according to W. H. Eisenman, secretary of the American Society for Steel Treating and director of the exposition.

Already more than 35,000 square feet of space has been reserved by 125 exhibitors. In only 3 cases have companies asked for less space than in previous years, while 25 organizations will increase their displays substantially. The exposition is held each year in conjunction with the National Metal congress, headquarters of which in Boston will be at Hotel Statler.

## Third Week on Proxies

Bethlehem Steel Corp.'s annual stockholders meeting, which convened April 14 at Newark, N. J., is going into its third week as proxy votes on the Bethlehem bonus matter continue to be checked.

# Industrial Men in the Day's News

## Walter Harnischfeger, President, the Harnischfeger Corp., Milwaukee

ONE of the equipment industry's youngest chief executives, he arrives at the presidency with a working knowledge of practically every department.

ELECTRICAL division experience was followed by employment in other sections of the plant, and then came engineering, estimating, erecting and sales.

UNDER his sales management Pacific Coast, Canadian and European efforts of the company have shown great growth.

AFTER directing for eight years the sales policies of the Harnischfeger Corp., Milwaukee, one of the leading crane, hoist and control manufacturers of the country, and advancing through its various operating divisions, Walter Harnischfeger now serves as its president. He is one of the youngest chief executives of large industrial enterprises in the United States, having succeeded to the presidency upon the death of his father five months ago. This company was established in Milwaukee in 1884.

Upon graduation from the Milwaukee University school, Mr. Harnischfeger entered the electrical division of the shops of Pawling & Harnischfeger Co. as the corporation then was known. Further training and experience followed in virtually every other division of the plant. Later he worked in the engineering and estimating departments and finally gained experience in the field as erector of the company's equipment.

Becoming identified with the sales organization in 1918, he established west coast branches. Two years later, in 1920, he returned to Milwaukee to take charge temporarily of the works manager's office and that same year was elected a vice president. Just prior to the changing of the name style to the Harnischfeger Corp., in 1924, Mr. Harnischfeger assumed the additional duties of sales manager, and following the death of Henry Harnischfeger in November, 1930, he was made president.

During the eight years he has had charge of its sales the company's effort expanded rapidly and its scope has greatly widened. In 1928 the Milwaukee Electric Crane & Hoist Corp. was purchased and this on Jan. 1, 1931, became the Milwaukee Crane & Hoist division of the parent organization. In 1929 the Harnischfeger Corp. of Canada Ltd. was established, and in 1930 the Compagnie des Machines Harnischfeger, Paris, France, was formed to handle the European business.

Mr. Harnischfeger travels considerably, his work carrying him practically to every state in the union and to foreign countries when first-hand knowledge of conditions in them is desired. He is a director of the National Bank of Commerce, Milwaukee, director of Milwaukee Metal Trades association, a member of the safety committee of National Metal Trades association, and also maintains memberships in Milwaukee Athletic, Wisconsin and Blue Mound Country clubs, Milwaukee, and Midland club, Chicago.

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CLARENCE H. HOWARD has resigned as chairman of the board of General Steel Castings Corp., Eddystone, Pa., the position he has held since July 30, 1929, when it acquired the Commonwealth Steel Co., St. Louis, of which he had been president for the preceding 25 years.

C. H. Howard Jr., manager of the foreign department, General Steel Castings Corp., and E. Howard Hooper, assistant to Clarence H. Howard, also have resigned, and it is understood they will be associated in a new business undertaking to be announced later.

Mr. Howard worked four years as an apprentice at North Platte, Nebr., then locating in St. Louis in 1882. He was graduated from Washington university and became foreman in the Missouri Pacific shops and later superintendent of Missouri Car & Foundry Co., Cambridge City, Ind. In 1889 he had charge of the railroad department of a St. Louis furniture company and in 1890 he became general manager of St. Charles Car Co., St. Charles, Mo. In 1891 he was made secretary of the Safety Car Heating & Lighting Co., New York, with offices in St. Louis, and had charge of the western district. He remained eight years and in 1899 became vice presidnt of Shickle, Harrison & Howard Steel Co., St. Louis, later known as Leighton & Howard Steel Co., which was absorbed in 1902 by American Steel Foundries. Mr. Howard obtained control of the Commonwealth Steel Co. in 1904 and was elected president.

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F. W. Miller, formerly vice presi-

dent of Rogers Brown & Crocker Bros. Inc., Cincinnati, has been appointed vice president of Swann Chemical Co., in charge of the Cincinnati office and in direct charge of its sale of ferro phosphorus, formerly handled by him for Rogers Brown & Crocker Bros. He also will handle sales in the Cincinnati territory of chemicals, abrasives and lampblacks for several Swann Corp. subsidiaries. He had been with Rogers Brown and its successor for 35 years.

J. R. Morehead, also formerly with Rogers Brown & Crocker Bros., as assistant to Mr. Miller, has become identified with the Swann Chemical Co., and will be associated with Mr. Miller in the Cincinnati office.

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B. N. Greenlaw has resigned as Bayonne, N. J., plant manager, American Radiator Co.

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John L. Blair, associated with the W. A. Riddell Co., Bucyrus, O., since 1928, latterly as foundry and sales manager, has become identified with Swedish Crucible Steel Co., Detroit.

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J. C. Chaffe is now identified with the Philadelphia sales force of Republic Steel Corp., Youngstown, O. He formerly was vice president of Wrought Iron Co. of America, and previously had been with the Philadelphia office of A. M. Byers Co., Pittsburgh.

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August M. Saunders, for more than 47 years identified with the National Tube Co., Pittsburgh, will retire May 1 to take up his residence in Los Angeles. He was superintendent of the tube and pipe mills at McKeesport, Pa., for a number of years, the last few years being secretary of the patent committee and consultant.

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Carleton Beckwith, formerly assistant to the late Charles F. Olin, has been made advertising manager of New Departure Mfg. Co., Bristol, Conn. He was graduated from Amherst college in 1911 and then became affiliated with the sales department of the New Departure company. Two years later he became first assistant to Mr. Olin, advertising manager, whose death was noted in STEEL of Feb. 5.

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G. H. Garcelon has been appointed manager of the control engineering department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., to succeed J. H. Belknap, who has been transferred to the engineering division of the Pittsburgh district office. Mr. Garcelon became identified with Westinghouse upon his graduation from Massachusetts Institute of Technology in 1903. Latterly he has been manager of engineering at East Springfield, Mass., designing small motors.

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Garret A. Connors Jr., director of purchases for Truscon Steel Co., Youngstown, O., has been appointed a vice president. Mr. Connors has been with the company almost since its organization. He was appointed director of safety in 1918 and general purchasing agent in 1929. He also was employment manager and genereal efficiency engineer for Truscon industries. He was closely identified with the purchasing office for a long period and maintained sales contacts with large interests.

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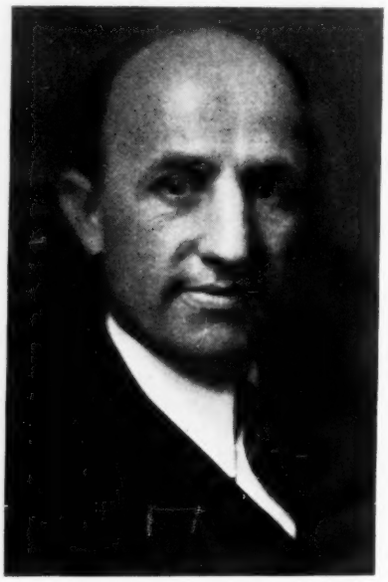
Edwin C. Stout has been appointed assistant sales manager of the combined wire and springs departments of Wickwire Spencer Steel Co., New York. In addition to his recent affiliation with the wire sales department, he continues as the manager



**Edwin C. Stout**

of the spring division. In 1908 Mr. Stout was a member of the sales department of the American Steel & Wire Co., at New York, handling the sale of electrical and special wires, rope and springs. After six years, he was appointed assistant sales manager of the Baltimore branch of the American Steel & Wire Co. In October, 1920, he joined the sales organization of Wickwire Spencer Steel Co., covering the Cleveland district on all products of their manufacture for a period of four years. Subsequently he was appointed manager of the spring sales division at the general offices in New York.

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C. H. Adamson, secretary of Stephens-Adamson Mfg. Co., Aurora, Ill., conveyors, screens, etc., has been placed in direct charge of sales and engineering for the Chicago territory. The company has enlarged its Chicago office, establishing new headquarters in the Civic Opera building, 20 North Wacker drive. Mr. Adamson was director of company advertising and sales promotional work for many years. He is a graduate of Carnegie Institute of Technology and an experienced engineer.

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W. J. Totten, district manager of sales at St. Paul for United States Steel Corp. subsidiaries, retired April 21, after more than 51 years of service with Steel corporation subsidiaries and predecessor companies. For a number of years Mr. Totten was assistant general sales manager for the Illinois Steel Co., Chicago.

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H. F. Seifert, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been nominated president of Pittsburgh Foundrymen's asociation for 1931-1932. He had been vice president during the past year. T. A. Reynolds, McConway-Torley Co., was nominated vice president, and William J. Brant was renamed secretary-treasurer.

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M. G. Sternberg, formerly general manager of the Hubbard Steel Foundry Co., East Chicago, Ind., part of Continental Roll & Steel Foundry Co., has been placed in charge of operations for the parent company.

Henning A. Foresberg, formerly assistant to Mr. Sternberg, has been appointed superintendent of the Hubbard division.

James Thomson, formerly chief engineer of Hubbard division, has been made chief engineer of the entire organization, with headquarters at East Chicago.

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William H. Eaton, for 28 years Chicago district manager of sales for American Sheet & Tin Plate Co., Pittsburgh, retires May 1. He started in 1876 as office boy for Parkhurst & Wilkinson, and in 1888 he became salesman for Carnegie, Phipps & Co., in their Chicago office. In 1896 he became asociated with Aetna-Standard Iron & Steel Co., Bridgeport, Conn., and upon formation of American Sheet Steel Co., American Tin Plate Co., American Steel Hoop Co., and National Steel Co., Mr. Eaton was appointed foreign sales manager for National Steel Co. and established headquarters in London. Upon formation of United States Steel Corp., he returned to this country and shortly was appointed Chicago manager of sales for American Sheet & Tin Plate Co.

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Frank R. Bacon, formerly chairman of the board of Cutler-Hammer Inc., Milwaukee, was elected president April 14 to fill the vacancy caused by the death of Beverly L. Worden, noted in STEEL of April 2. The office of board chairman was abolished. Other officers elected at the same meeting are: F. L. Pierce, and J. C. Wilson, vice presidents; H. F. Vogt, treasurer; and W. C. Stevens, secretary. Directors were increased from seven to ten, new

(*Concluded on Page 65*)

# Obituaries

PORTER POLLOCK, 67, since 1913 president of the William B. Pollock Co., Youngstown, O., builder of blast furnaces, died April 20. Born at Youngstown Feb. 8, 1864, he early entered the boiler shop business founded by his father in 1863 as Pollock & Co. He became a partner of his father in 1881, being made vice president and general manager, and upon the death of his father in 1913 was made president. Gradually the company turned from boiler making to heavy plate construction, building blast furnaces, open-hearth furnaces, and their equipment. Mr. Pollock is credited with perfecting the development of hot metal and cinder handling equipment. In addition to stacks in this country, his company erected blast furnaces in India.

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Frank V. Oldham, 65, president of Crocker Saw Co., Lockport, N. Y., died April 24.

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Patrick McNicol, production manager and part owner of National Drawn Steel Co., East Liverpool, O., died recently.

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Clinton G. Wilderson, 58, president of Crescent Machine Shops, Leetonia, O., died at Cleveland April 19.

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George M. Bole, 69, former president of the Pittsburgh Steel Construction Co., Pittsburgh, died April 20.

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Edgar Green, 67, production manager, Columbus Malleable Iron Co., Columbus, O., died April 21. He had been with the company more than 17 years.

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Joseph F. Savage, 46, formerly general manager of Hamilton Furnace Co., Hamilton, O., died at New York recently, where he was a member of the stock exchange.

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Thomas M. Richards, 78, formerly sheet mill superintendent of Dover Works American Sheet & Tin Plate Co., New Philadelphia, O., when it was known as Reeves Iron Works, died April 14.

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John Wegner Jr., 56, sales manager of National Enameling & Stamping Co., Milwaukee, died April 19. He was a native of Milwaukee and had been with the company 31 years.

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J. Hugh McInnis, 47, since Jan. 1, 1917, assistant general superintendent of the Inter-State Iron Co., Virginia, Minn., died April 15. He had been with the company since 1905, first as chief chemist. He previously was with Oliver Iron Mining Co., Eveleth, Minn.

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Joseph R. Ellicott, 72, formerly with Westinghouse Air Brake Co., Wilmerding, Pa., died April 16 at Ormond Beach, Fla., He was New York district manager of both the Westinghouse Traction Brake Co. and the Westinghouse Air Brake Co. from 1905 until his retirement in 1919. Previously he had been general manager of the Standard Air Brake Co. which became a part of the Westinghouse interests.

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# The Business Week In Washington

TARIFF commission has been requested to make an investigation of steel antifrictioin balls, for the purpose of increasing the duty. The application for the increase was filed by Hider Steel Ball Works, Binghamton, N. Y.

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Secretary of Labor Doak does not believe the railroads intend to reduce wages. He says that the majority of wage reduction proposals are coming from bankers.

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Further increase in industrial activity was reported for March, which usually shows little change from February, according to the federal reserve board. Factory employment and pay rolls increased by the usual seasonal amount between the middle of February and the middle of March, the board states.

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Department of commerce states lower commodity prices were responsible for more than a third of the percentage decline in value of the United States export trade in 1930 and for more than half of the reduction in imports.

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Dr. Julius Klein, assistant secretary of commerce, in a communication to Senator Dickinson, of Iowa, states that in his opinion the unemployment dole in England is "a hopelessly excessive burden of taxation and it stultifies the ambition of labor groups and has led industry to account for it as partial payment of wages."

# Cheerful Trends in Business World Soften Less Favorable Aspects

I BELIEVE in the common sense and ability of the American people and I have, therefore, no fears of the present or the future. The immediate present, statisticians of the telephone company tell me, shows signs of improvement"—W. S. Gifford, president, American Telephone & Telegraph Co.

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Individual sales and shipments of Hibbard, Spencer, Bartlett & Co., Chicago wholesale hardware and steel jobbers, on April 20 were the largest since the company was formed in 1855.

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A record prosperity—better times than ever—will follow the present depression, according to Charles M. Schwab, chairman, Bethlehem Steel Corp.

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Business conditions as reflected by indicators of the basic industries showed further signs of improvement in March, according to the National Industrial Conference board, New York.

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"I have canvassed the principal industries and I find no movement to reduce wages. On the contrary, there is a desire to support the situation in every way."—Secretary of Commerce R. P. Lamont.

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Electric Household Utilities Corp., Chicago, manufacturer of metal washing machines and equipment, reports March retail sales exceeded those of any previous March.

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Ross Gear & Tool Co., Lafayette, Ind., discloses that shipments of the company's automotive steering gears in April are heavier than for any month since September, 1929. April shipments will be slightly more than 10 per cent over April, 1930.

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Improved demand for forged steel tools is reported by the Barcalo Mfg. Co., Buffalo, which has added to its payrolls to such an extent that the working force shows a gain of nearly one-third in four months.

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A "big upturn" in employment—as announced from Washington—has convinced Col. Arthur Woods, chairman, President's employment committee, that several of his associates may retire, while he goes to Europe to study conditions there.

# Here and There in Industry

INTERNATIONAL-STACEY CORP. is being formed by consolidation of the International Derrick & Equipment Co., Columbus, O., and the Stacey Enginering Co., Cincinnati, stockholders of both companies voting in favor of the merger. Resources will be close to $10,000,000. Carmi I. Thompson, Cleveland, president of the Stacey company, will be chairman of the board and Harry M. Runkle, Columbus, president of the International Derrick company, will be president and general manager.

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Pittsburgh-Des Moines Steel Co., Pittsburgh, has changed its New York office address from 50 Church street to 270 Broadway.

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Traylor Engineering & Mfg. Co., Allentown, Pa., moves its New York office May 1 from 30 Church street to room 2513 Empire State building.

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Harnischfeger Sales Corp., Milwaukee, has moved its New York offices from the Hudson Terminal building to the Empire State building.

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Ferro Enamel Co., Cleveland, is installing a third U-type continuous electric porcelain enameling furnace for the Mullins Mfg. Corp., Salem, O.

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Cleveland Cap Screw Co., Cleveland, has established a branch office at 90 Second street, Milwaukee. Ralph Bean is branch manager.

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Waldo, Egbert, Maltby & Ward Inc., Pittsburgh, dealer in pig iron, coke, alloys and fuel oil, has moved its offices from the Union Trust building to the Oliver building.

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Union Foundry Works, Chicago, has removed its downtown office to the foundry plant at 7610 Greenwood avenue, Grand Crossing station, Chicago. The downtown office had been at 38 South Dearborn street.

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Niagara Combustion Corp. has been organized at Niagara Falls, N. Y., to deal in machinery and tools by Wilton McK. Taylor, DeWitt Dodson, H. A. Freeman and James W. Mallam, all of Niagara Falls.

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Blaw-Knox Co., Blawnox, Pa., has closed a contract with American Tractor Equipment Co. to take over its manufacture and sale for the eastern part of the United States and foreign countries.

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Bucyrus-Erie Co., South Milwaukee, Wis., has received a contract from the United States engineer office at Memphis, Tenn., for a mechanical bank grader for use on Mississippi river levee work, at a price of $95,875.

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Esterline Angus Co., Indianapolis, manufacturer of electrical instruments, has appointed Electrical Instruments Inc., 564 Erie building, Cleveland, its representative in Cleveland territory. P. J. Burrill and J. L. Vergilio compose the latter company.

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White Sewing Machine Corp., Cleveland, has closed a contract with Electrolux Inc., New York, for the manufacture of Electrolux vacuum cleaners. Previously these cleaners have been manufactured only at Stockholm, Sweden, home of the Electrolux company.

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Premax Products Corp., Niagara Falls, N. Y., has been formed by bondholders' protective committees and has purchased the assets of Premax Products Inc. and will continue operation of the latter corporation's plant at 235 Tenth street. The same line of metal specialties will be manufactured.

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Dardelet Threadlock Corp., 120 Broadway, New York, has granted to the S. M. Jones Co., Toledo, O., a license to manufacture and sell sucker rods with the Dardelet self-locking screw thread. A certificate of insurance on broken rods will be furnished with all sucker rods manufactured with this thread by the Jones company.

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Krone-Sebek Die Casting Mfg. Co., 2935 West Forty-seventh street, Chicago, automotive accessories and die castings for automobiles, tractors and radios, has taken over Autodraulic Corp., a company marketing a hydraulic jack for automobiles. Krone-Sebek company will market the product of Autodraulic Corp.

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Allis-Chalmers Mfg. Co., Milwaukee, has booked a $400,000 order for a steam turbine and generator unit of 25,000 kilowatt capacity, for the municipal power and light plant at Pasadena, Calif. It is the third Allis-Chalmers installation, the first, of 10,000 kilowatts, being made in 1923, and the second, of 15,000 kilowatts, in 1927.

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Newton Steel Co., Youngstown, O., is moving its Cleveland office into a larger space at 1816 Union Trust building from the present location at 1913 Union Trust building. F. C. Flood, as noted in STEEL April 9, will be located as district manager of sales at Cleveland; D. H. McVay, former district sales manager and newly appointed eastern sales manager, will also make his headquarters in the new Cleveland offices.

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National Warm Air Heating association, Columbus, O., has been formed by consolidation of the Warm Air Furnace institute and National Warm Air Heating association. The experimental laboratory at the University of Illinois for the study of residential heating problems will be continued. W. L. Jones, Utica, N. Y., has been elected president of the new organization. Allen W. Williams, 51 Meadow Park avenue, Bexley, O., is secretary.

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Whitcomb Locomotive Co. has been organized by the Baldwin Locomotive Works, Eddystone, Pa., to take title of the property of the George D. Whitcomb Co., Rochelle, Ill., recently sold at foreclosure. The Whitcomb company manufactures gasoline, oil and diesel electric industrial locomotives. Samuel M. Vauclain is chairman of the new company, George H. Huston, president; John P. Sykes, vice president; and Harold H. Perry, vice president and general manager. The business will be developed under the direct control of Baldwin.

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Eagle-Picher Lead Co., which has had its general offices at Chicago since 1918, is relocating its headquarters in the Temple Bar building, Main and Court streets, Cincinnati. The Chicago offices have been at 134 North LaSalle street. The Chicago branch sales office, being continued as a separate unit, will remain the control office of the western sales division under direction of W. H. Hayt, western sales manager, but will be moved from the LaSalle street address to the company's warehouse and metal department at 4401 South Western boulevard, Chicago.

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Dresser Nordstrom Co. is being formed by merger of the S. R. Dresser Mfg. Co., Bradford, Pa., and the Merco Nordstrom Valve Co., San Francisco. Ratification of the consolidation awaits approval by stockholders of the Dresser company, whose directors have voted in favor. The Dresser company manufactures pipe line equipment and the Merco Nordstrom company lubricated plug cock type valves. Directors of the new company will include the present Dresser board, Fred A. Miller, chairman. H. N. Mallon, president of the Dresser company, will be president, and Merrill N. Davis, vice president.

*Fairchild Aerial Surveys*

# BEAMS FROM BROADWAY

*NEW YORK*

THE flag is up" is always pleasing to the structural steel crew and generally the raising of the flag is accompanied by a ceremony. But it isn't always a flag that is raised to the highest beam of the structural steel frame when the job is done. To this day some crews prefer an evergreen tree or branch.

The custom among structural steel workers has often been discussed and not always understood. It dates back to the precivilized period when man was a tree worshipper. He lived under and in trees and with the building of huts continued to keep the tree over his head.

The custom is general and is carried out in various forms in Europe after the completion of a building, the act of raising the flag or tree over modern skyscrapers being one form of the old ceremony.

After the 50-story Irving Trust Co. building at 1 Wall street had attained its highest point, the builders complied with the old rites by fastening a small evergreen tree to the topmost girders. When the New York Life building was topped off, however, a flag had been used in place of a tree.

But the fact that some workmen prefer a tree to a flag was illustrated when, after a flag had been offered to a crew on Park avenue it was discarded for a leafy tree branch brought in from the suburbs by one of the men.

## Change Radio Center Plans

Another progressive step in the Metropolitan Square-Radio City project of the Rockefellers, for which the record structural steel award of 125,000 tons was made in March, is the filing of plans for four structures, one a 66-story office and studio building. These will be the first units, one to be ready in the fall, 1932, but which will be the first completed still is uncertain.

Work of clearing the site is about to start and 133 old structures will be wrecked for the four new ones. Plans were filed through the office of Reinhard & Hoffmeister, one of three firms of architects designing the plans.

The original model of Radio City has been somewhat changed, probably eliminating the oval building which called forth considerable criticism, being termed by some a "gas tank."

## Four Units Are in Hand

The cost of the first four units is estimated at $26,500,000, including: 30-story office and theater, east side Sixth avenue, Fiftieth to Fifty-first street; 66-story office and studio, east side Sixth avenue, north of Forty-ninth street; six-story office and studios, west side Fifth avenue, Forty-ninth to Fiftieth street, and 2-story theater, Sixth avenue, southeast corner of Forty-ninth street.

Structural steel for the entire development will be fabricated by the American Bridge Co. New plans will not greatly change the tonnage expected to be required, about 125,000 tons. Other contracts for materials will be placed well ahead of requirements and will include large tonnages of pipe, reinforcing bars, and other steels and metals.

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A silencer for riveting machines long has been the dream of city dweller and office worker. Now comes the prediction that such a silencer will be on the market in less than a year. Addressing the Women's City club, Edward F. Brown, director of the Noise Abatement commission, predicted this silencer. He also called attention to the fact that following a conference with auto-horn manufacturers only 7 per cent of the horns manufactured are now objectionable.

Much progress has been made in engineering work which tends to lessen noise in large cities, notably development and installation of noiseless turnstiles in subways. Among other new things which will call for the use of additional steel and metals, Mr. Brown predicted sound ventilators to keep loud sounds from the windows, with future building requiring as much attention to soundproofing as to fireproofing. This sounds well and it must be admitted the noise factor in large cities has an important effect on health and that engineering along these lines is going ahead.

## Stairs Take Much Steel

The volume of miscellaneous steel entering into large building projects is surprising. First is structural steel and it is of prime importance, making the tower possible.

While elevators are the main engineering factor, these great structures must also have stairs. Among the contracts recently placed for the Metropolitan Life building was one with Sexauer & Lemke, Astoria, for steel and other work, including stairs which will take about 500 tons of steel.

W. H. Jackson & Co., Brooklyn, will furnish more than 1000 windows. These will be extruded bronze.

In the Empire State building there are 350 flights of stairs, accounting for several hundred tons of plates and pressed steel.

(*Concluded on Page* 84)

# EDITORIAL

## U. S. Steel Sets Pace in Management Policies

ORDINARILY annual stockholders' meetings are dull affairs but the recent meeting of the stockholders of the United States Steel Corp. was a notable exception. It afforded topics of interest to millions of individuals who are not identified with the corporation as employes or owners of its stock.

Outstanding among the distinctive features of this meeting at Hoboken was a revised pension and retirement plan, which was ratified. It provides for the automatic retirement of officers and employes at the age of 70 or between the ages of 65 and 70 if considered advisable by the executive committee or by the officers. It also provides for an increase in pension rates. Pensioners will receive annually an amount equal to 1 per cent of the average salary during the last 10 years multiplied by the number of years of service.

Pension plans no longer are a novelty in American business. Many corporations have adopted them—sometimes without adequate consideration of their effect in the future. The system ratified by U. S. Steel will be watched closely because it is designed to solve simultaneously two important problems of management: fair treatment to those who have devoted their lives to the service of the company and an equitable plan of retirement.

### Revised Plan Solves Two Important Problems of Management

Much emphasis has been placed on the latter phase of the plan, probably because it would seem to place a dead-line on the length of service of some of the most useful executives. However, it should be noted that the provisions of the system do not apply to directors and that (to quote Mr. Farrell) "the company wants to consider those who have retired not as ending their service . . . but as constituting a supplemental service which would be called upon in case of need." Therefore, while the plan definitely assists the executive committee by automatically retiring officials and others at stated ages, it does not deprive them of the continuing counsel of those qualified to give it.

Another distinctive feature of the meeting was the disclosure of certain aspects of the corporation's bonus system. According to Chairman Taylor, payments during the eight years, 1923 to 1930, averaged $3,112,168 annually. This was shared by 2574 executives, officers and employes. The largest amount received by any one individual in 1930 was $70,830, of which $42,572 was in cash and the remainder in stock purchase allowance. No bonus disbursements are made, stated Mr. Taylor, until after a net income—after all charges, taxes, depreciation—of $100,000,000 for the year is shown, providing for preferred and common dividends in full, amortization, bond interest, sinking funds, etc.

The plan is noteworthy in that the bonus involves a large number of employes and therefore is democratic in principle, is not operative until earnings have been provided for many fixed charges, is paid partly in common stock thereby increasing the beneficiary's interest in earnings, and yet provides the incentive for unusual effort that is common to all bonus plans.

### Corporation Fulfills Pledge To Take Care of Employes

A third important problem discussed at the meeting was that of employment. That U. S. Steel has extended itself to distribute work equitably among its employes was evident from Mr. Taylor's report on the labor situation. The normal working force, he declared, is about 241,000 employes. In the last half of March 79,000 were on full time, 145,336 on part time and 7490 were idle. The chairman's final statement on this subject, to the effect that so far as he was aware, "not a single employe, working or otherwise, is in want" is a fine commentary on the Steel corporation's determination to carry out its previously announced policy of "taking care of its own."

Not the least impressive aspect of the Hoboken meeting was the atmosphere of stability and strength created by the discussions of business conditions by Chairman Taylor and President Farrell. Without discounting in the slightest degree the seriousness of the depression, they expressed a brand of sane optimism which is conspicuously absent in many business circles.

Not every steel producing company has the good fortune or the opportunity to be in the strong position held by U. S. Steel. But every unit in the American steel industry—large or small—is fortunate in that the largest member of the steel family at its recent stockholders' meeting gave expression to such high ideals in management. The Steel corporation itself will derive the direct benefits of these enlightened policies, but the entire industry will profit from the example and from the reflected glory of its achievement.

# THE INDUSTRIAL DIAL

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The Business Trend Section of STEEL

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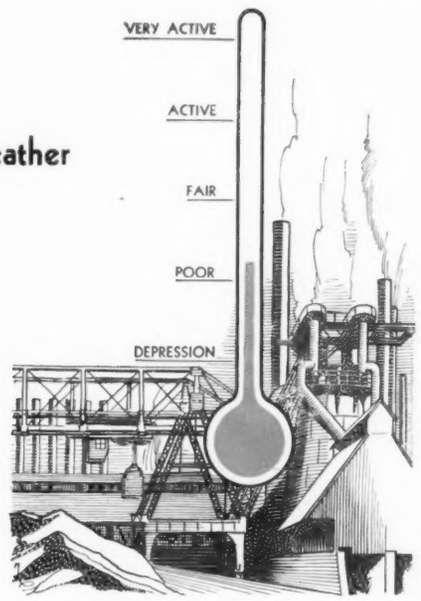
PRACTICALLY every important barometer of production showed a gain in March over February. However, the brightness of the statistical picture was dimmed by a mild recession in activity which became apparent before the end of March and has continued throughout April.

Steel ingot and pig iron production, freight traffic, machine tool orders, and the Federal Reserve board's index of industrial production all showed moderate gains for the month of March. The increases in automobile output and in the volume of building awards were even more impressive. On the other hand, awards for railroad cars for the first quarter were almost negligible; contracting by the oil, gas and water interests was almost at a standstill; and in certain other industries conditions were unfavorable.




### Activity

The net result of these factors on steel operations was reflected in the steady rise of the steelworks rate to 57 per cent of capacity in the third week of March and in the decline since that time to a current rate of around 50 per cent. The inevitable conclusion is that the necessary underlying support for a continuing upswing in industrial activity has not yet crystallized.

### Prices

Commodity prices in early March staged what appeared to be a determined resistance against further declines. Bradstreet's index of April 1 actually was 6 cents higher than on March 1.

## Where Business Stands

Monthly average 1930 = 100

| | March, 1931 | Feb., 1931 | March, 1930 |
|---|---|---|---|
| Steel ingot production | 91.2 | 82.6 | 129.6 |
| Pig iron production | 75.9 | 70.9 | 121.8 |
| Freight movement | 83.8 | 80.6 | 99.9 |
| Building construction | 89.2 | 66.6 | 126.5 |
| Automobile output | 98.1 | 78.7 | 142.6 |
| Wholesale price | 85.9 | 85.3 | 104.0 |

However, weaknesses which began to appear in the last week of that month have continued into April, with the result that weekly index figures have dropped consistently. STEEL's composite, which turned upward in March, has declined to a new low of $31.51.

### Demand

The steel industry depends largely upon the building, railroad, automobile and oil, water and gas industries for demand for steel. In March building construction and motor car manufacturing, with some support from many smaller industries, furnished most of the tonnages for the rolling mills. Until steel requirements are better balanced or appear in greater volume, the steel industry will be forced to mark time at near the present rate of operations. Confidence among the promoters of large projects is not lacking, but this confidence must spread throughout the industrial world before the foundation for resumed normal demand can be built.

## Business Trend Charts of the Month

**Production**

Steel ingot production ..... April 16, p.31
Pig iron production ..... April 9, p.35
Blast furnace production rate ..... April 16, p.31
Industrial production ..... April 2, p.35; April 30, p.29
Coke output ..... April 2, p.36; April 30, p.29
Coal production ..... April 16, p.29

**Demand**

Unfilled orders, U. S. Steel Corp. ..... April 16, p.27
Railroad car orders ..... April 9, p.38
Index of machine tool orders ..... April 23, p.37
Building construction ..... April 16, p.29
Automobile output ..... April 2, p.38; April 30, p.30
Steel sheets ..... April 23, p.37
Steel castings ..... April 2, p.37
Structural steel sales ..... April 2, p.37
Foundry equipment orders ..... April 23, p.38

**Prices**

Bradstreet's index ..... April 9, p.36
Iron and steel price index ..... April 16, p.30; April 23, p.35
Foundry pig iron prices ..... April 9, p.37
Iron and steel price parity ..... April 9, p.38
Basic iron—heavy melting steel ..... April 2, p.36

**Miscellaneous**

Foreign trade ..... April 23, p.38
Freight traffic ..... April 9, p.36; April 16, p.33; April 30, p.30
Commercial failures ..... April 9, p.37
Refined copper ..... April 16, p.30
Railroad earnings ..... April 16, p.33
Iron and steel foreign trade ..... April 2, p.38
Analysis of steel companies' earnings ..... April 23, p.36

# Thumb Nail Sketches of Business

**Blast Furnace Activity**

Pig iron production in March was up about 7 per cent over that of February, registering a gain for the third consecutive month. Eight stacks were blown in and one was blown out, the number of active stacks on March 31 totaling 116 out of a potential of 307. On Feb. 28 a total of 109 stacks was active and on Jan. 31 the number was 102. The March 31 total was the largest since last September when 126 were blowing.

**Outlook in Agriculture Uncertain**

The situation with the farmers at this season depends largely upon the weather during the time of field work and the plans to be made for increasing or decreasing crop acreages. With a fairly early growing season at hand, rains have taken care of crop needs in most of the country, except for a few sections in the east. Inventories of old crops are heavy with wheat and cotton but light in coarse grains.

**1930 Dividends High**

Although the net earnings of leading industrial corporations in 1930 were the smallest since 1924, dividend payments by these companies made a new high record, according to a report issued by the Midland Bank, Cleveland. In the period from 1922 to 1929 the earnings of 124 large industrials rose from $641,000,000 to $1,425,000,000 and meantime cash dividends increased from $386,000,000 in 1922 to $875,000,000 in 1929. In 1930, when earnings were only $888,000,000, cash dividends totaled $880,000,000. The percentage of cash dividends to earnings for 11 years is as follows:

| Year | Per cent | Year | Per cent |
|---|---|---|---|
| 1920 | 54.6 | 1926 | 60.7 |
| 1921 | 121.7 | 1927 | 74.4 |
| 1922 | 60.2 | 1928 | 63.5 |
| 1923 | 55.8 | 1929 | 61.4 |
| 1924 | 62.1 | 1930 | 99.1 |
| 1925 | 55.1 | Average | 66.5 |

A comparison of the present situation with that in 1921-1922 indicates that dividends were reduced earlier in the 1921 depression than in the 1930 depression, but were quickly increased when recovery got well under way.

**Unfilled Steel Orders**

On March 31 unfilled bookings of the United States Steel Corp. totaled 3,995,330 tons, representing a slight gain over February. In March last year the comparable figure was 4,570,653 tons. In 1930, the unfilled orders declined in each of the three months of the second quarter.

**Employment**

The modest gain in employment registered in February was carried into March, but the improvement was slight. The index of factory employment compiled by the Federal Reserve board stood at 77.9 in March as compared with 77.8 in February and 92.9 in March last year.

# The Barometer of Business

## Industrial Indicators

| | March, 1931 | Feb., 1931 | March, 1930 |
|---|---|---|---|
| Pig iron output (Daily av., tons) | 65,448 | 61,114 | 104,930 |
| Machine Tool Index | 89.4 | 73.1 | 177.8 |
| Unfilled orders (tons) | 3,995,000 | 3,965,000 | 4,570,000 |
| Ingot output (Daily average, tons) | 116,120 | 105,305 | 165,381 |
| Dodge Bldg. awards in 37 states (sq. ft.) | 37,954,500 | 28,338,600 | 53,810,000 |
| Automobile output.. | 289,334 | 229,810 | 417,188 |
| Coal output, tons.... | 33,873,000 | 31,417,000 | 35,773,000 |
| Business failures; number | 2,604 | 2,563 | 2,347 |
| Business failures; liabilities | $60,386,559 | $59,607,612 | $56,846,015 |
| Cement production, bbls. | 8,227,000 | 5,920,000 | 11,225,000 |
| Cotton consumption, bales | 490,586 | 433,510 | 507,646 |
| Car loadings (weekly average) | 737,204 | 708,920 | 878,859 |

## Foreign Trade

| | March, 1931 | Feb., 1931 | March, 1930 |
|---|---|---|---|
| Exports | $237,000,000 | $226,000,000 | $369,624,000 |
| Imports | $211,000,000 | $175,000,000 | $300,464,000 |
| Gold imports | $26,000 | $14,000 | $290,000 |
| Gold imports | $25,661,000 | $16,145,000 | $55,768,000 |

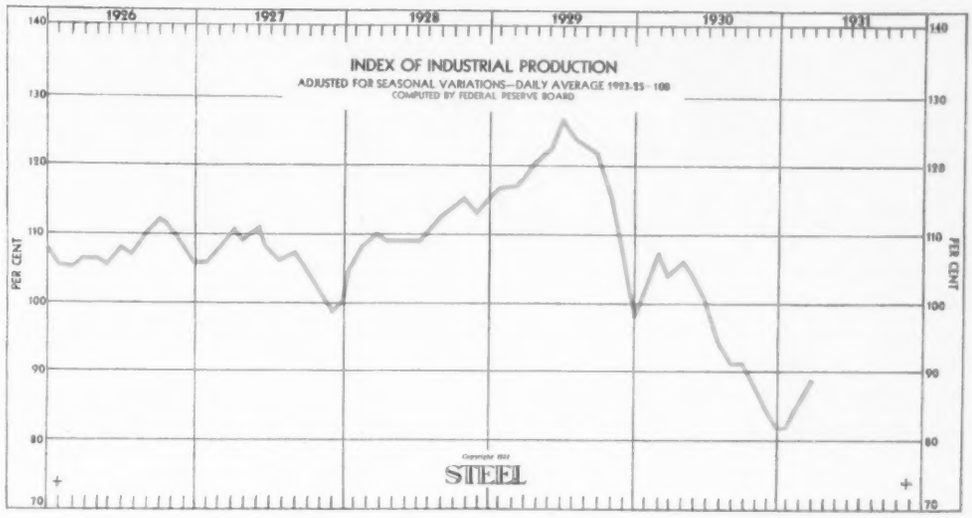
## Financial Indicators

| | March, 1931 | Feb., 1931 | March, 1930 |
|---|---|---|---|
| 25 Industrial stocks | $237.52 | $228.41 | $328.24 |
| 25 Rail stocks | $84.55 | 092.55 | $131.85 |
| 40 Bonds | $84.99 | $85.08 | $88.86 |
| Bank clearings (000 omitted) | $38,921,843 | $32,664,730 | $50,592,432 |
| Commercial paper rate N. Y., per cent | 2½ | 2¾ | 4¼ |
| *Commercial loans (000 omitted) | $8,150,000 | $8,151,000 | $8,669,000 |
| Federal Reserve ratio, per cent | 83.5 | 84.1 | 79.8 |
| Railroad earnings** | $27,264,467 | $33,849,116 | $59,452,006 |
| Stock sales, N. Y. stock exchange | 65,493,639 | 64,145,320 | 96,552,040 |
| Bond sales, par value | $244,754,250 | $190,121,850 | $348,077,300 |

*Leading member banks Federal Reserve System.
**February, January and February, respectively.

## Commodity Prices

| | March, 1931 | Feb., 1931 | March, 1930 | Monthly Average, 1913 |
|---|---|---|---|---|
| Steel's composite average of 14 iron and steel prices | $31.66 | $31.65 | $34.95 | $26.32 |
| Bradstreet's index | $9.23 | $9.17 | $11.18 | 100 |
| Wheat, cash (bushel) | 93c | 95c | $1.29 | 92c |
| Corn, cash (bush.) | 78½c | 82c | $1.00 | 51c |
| Petroleum, crude (Bbl.) | 57c | 92c | $1.17 | $2.50 |



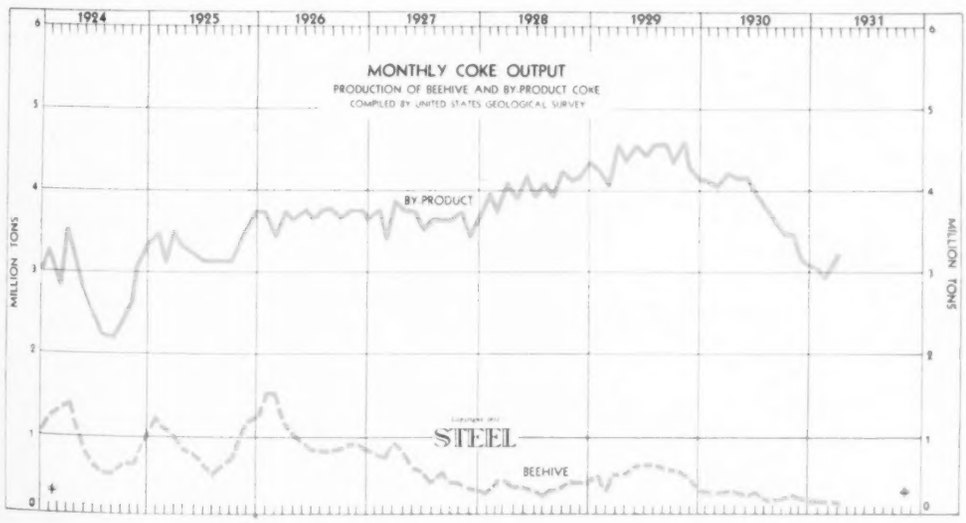

| | 1931 | 1930 |
|---|---|---|
| March | 88 | 104 |
| Feb. | 86 | 107 |
| Jan. | 82 | 103 |
| | **1930** | **1929** |
| Dec. | 82 | 99 |
| Nov. | 84 | 106 |

## Iron and Steel Aid in Lifting Index of Industrial Production

Another small gain in the Federal Reserve board's industrial production index was registered in March. It was up two points to 88 from the revised index for February. A year ago a decline from 107 to 104 took place and two years ago there was a gain of a single point from 117 to 118. Among the component parts of the index, the principal gain was in manufacturing and building. Manufactures rose from 86 to 88, with adjustment for seasonal variation. Building construction, without seasonal adjustment, rose from 57 to 90 in value of contracts awarded. In the adjusted figures for the manufacturing group iron and steel moved up from 73 to 79, textiles from 93 to 97 and leather and shoes from 87 to 90.

## March Output of By-Product Coke Gains, Beehive Continues Lower

Presaged in February by an increase in the daily rate, monthly coke output in March turned upward. The gain was in by-product coke, as beehive coke output continued to fall off. Moving upward by 12 per cent, March output of by-product coke was 3,256,289 tons or 105,042 tons daily, compared with 2,897,866 tons or 103,495 tons daily in the preceding month. Beehive coke output was lowered to 149,300 tons or 5742 tons daily from 162,900 tons or 6788 tons daily in February. Figures for the first quarter show that quarterly production of beehive, at 475,200 tons, was 46.7 per cent under the 1930 period. By-product coke production in the first quarter was 9,246,308 tons, down 26.6 per cent from the initial quarter of 1930.

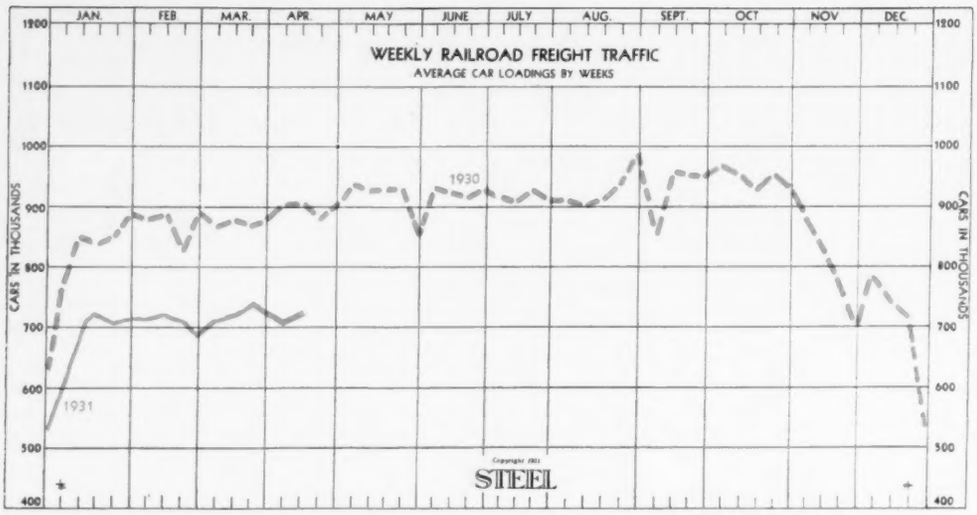



**By-Product**

| | Tons |
|---|---|
| March, 1931 | 3,256,289 |
| February, 1931 | 2,897,866 |
| March, 1930 | 4,393,696 |

**Beehive**

| | |
|---|---|
| March, 1931 | 149,300 |
| February, 1931 | 162,900 |
| March, 1930 | 290,700 |




| | 1931 | 1930 |
|---|---|---|
| April 11 | 737,934 | 911,316 |
| April 4 | 728,511 | 908,059 |
| March 28 | 740,079 | 885,324 |
| March 21 | 741,942 | 875,375 |
| March 14 | 734,262 | 881,187 |

## Minor Increase Is Reported in Freight Car Loadings

Revenue freight car loadings in the week ended April 11 increased slightly compared with the preceding week. Total for the period was 737,934 cars, a gain of 9423. The decline from the corresponding week of 1930 was 173,282 cars, and from the 1929 week, 235,218 cars. Freight traffic for the calendar year to date has amounted to 11,121,794 cars, 15 per cent under the total of 13,088,559 cars loaded in the 1930 period. Figures for the separate items during the last week reported show that miscellaneous freight required 294,315 cars, a decline of 89,538 cars from last year. Merchandise was next in the decline, with a decrease of 28,996 to a total of 223,635 cars.

## Production of Cars and Trucks Makes Further Gain of 25 Per Cent

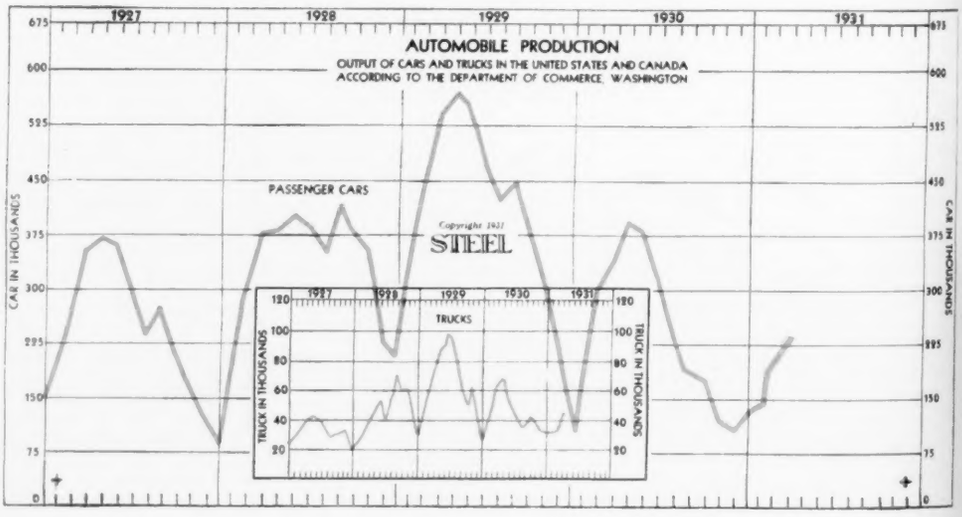
Gaining more than 25 per cent, car and truck, output in the United States and Canada in March made the best showing since last June. The combined total of March production was 289,334 units, of which 276,341 were produced in the United States and 12,993 in Canada. Output of passenger cars was 241,728 units and of trucks 47,606. The combined total is 53 per cent under record production in March two years ago and 30 per cent under one year ago. For the first quarter the United States made 668,131 and Canada 29,360 cars and trucks, the sum of both being about 40 per cent under the same period last year and 55 per cent below the first quarter of 1929.

**Passenger Cars**

| | 1931 | 1930 |
|---|---|---|
| March | 241,728 | 350,559 |
| Feb. | 187,948 | 294,868 |
| Jan. | 142,869 | 254,049 |
| | **1930** | **1929** |
| Dec. | 128,295 | 96,920 |

**Trucks**

| | 1931 | 1930 |
|---|---|---|
| March | 47,606 | 66,559 |
| Feb. | 41,862 | 51,084 |
| Jan. | 35,478 | 38,560 |
| | **1930** | **1929** |
| Dec. | 32,928 | 28,582 |



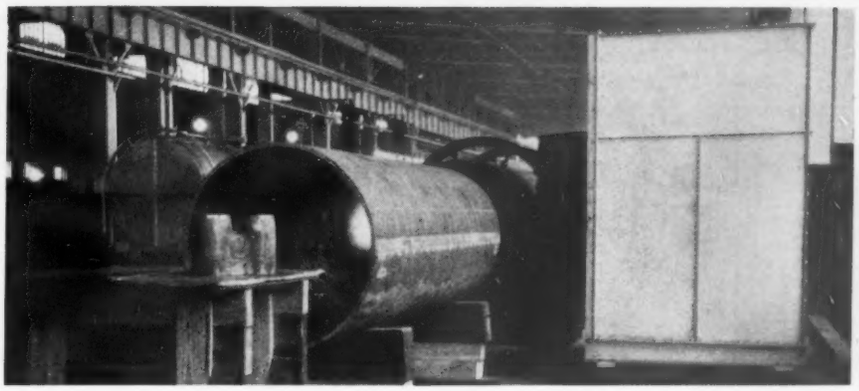


*Fig. 1—Portable X-ray equipment used for the routine inspection of welded pressure vessels*

*The tube can be rotated about its axis and raised and lowered as required for X-raying*

# X-Ray Inspection of Welded Joints

BY HERBERT R. ISENBURGER

St. John X-Ray Service Corp.

WITH development of automatic welding equipment, welding is being employed more and more in engineering structures. In numerous cases it is desirable to have a nondestructive test which will prove the soundness of the weld and at the same time give assurance that the material will stand the required strain of service. The X-ray provides a reliable means of examining the interior condition of welded joints without destroying them or in any way impairing their usefulness.

X-ray inspection answers and suggests solutions for the following oft-repeated problems: Is a weld sound throughout? Are there any inclusions of gases, slags, sand or other impurities? Was there any undesired absorption of gas? Is the welding rod of the proper size and was the current density appropriate? Is a weld burned? How did the fusion turn out (was penetration thorough)? Did any cracks develop within the welded section or the neighboring region and what causes such shrinkage? Are there any thinner spots within the weld metal caused by improper welding procedure? Were any repairs made afterwards, like caulking copper welds? Has the correct speed been used for a given welding operation? Was the coating of the rod satisfactory?

With the proper interpretation and utilization of the X-ray evidence, not only will the welding process be improved, but the welder's work can be controlled and bettered. This should not be a means of selecting good workmanship from bad, other tests are provided for this purpose.

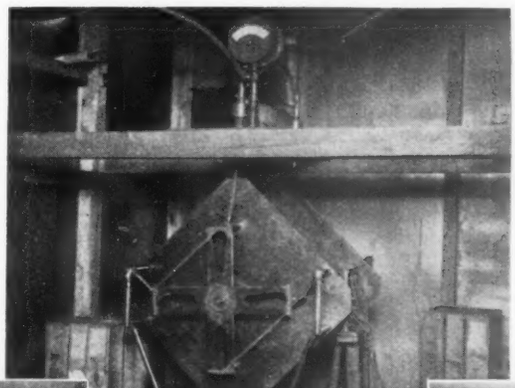


*Fig. 2 (Right)—Looking inside the sheet metal housing at an X-ray machine in action. Fig. 3 (Below)—Good welds cannot be differentiated from the parent metal—markers indicate where welds lie*

*Fig. 4 (Below)—A bad weld in which porosity, slag inclusions and lack of fusion are apparent. This weld was made defective purposely to study the meaning of the various spots appearing on the exograph*

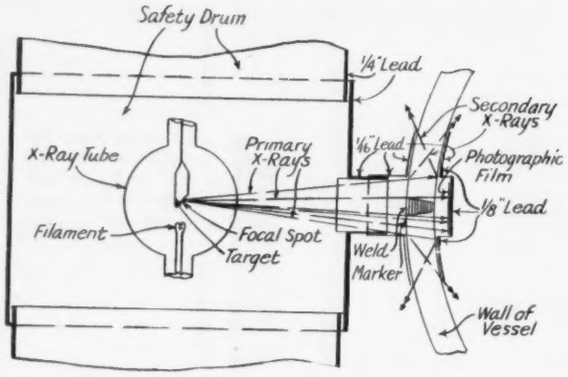



*Fig. 5—Diagram showing arrangement of tube, weld, film and lead shields in X-ray inspection of welded seams*

A sound weld, however, depends upon many factors which are only too easily disregarded in routine work, especially where men are working against time.

With exographs available, the welder should be taught to use the proper technique for a successful welding operation. In practice, sample welds should be made in scrap pieces of plate of the kind to be used in construction; and these should be X-rayed. Films of the preliminary welds are studied and the technique is modified accordingly. As soon as the test plates are perfect and the correct procedure determined, production is started. While the work is in progress, test coupons should be X-rayed at intervals.

For certain materials X-ray inspection may tend to be a rigid test, calling for skill in the interpretation of the exographs and a thorough knowledge of the material's ultimate use. Its results, therefore, must be studied carefully and with expert advice.

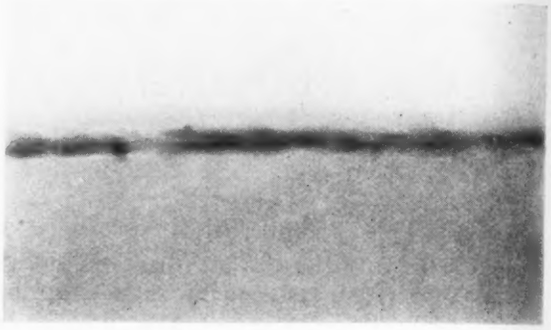
At this point it would be well to become familiar with a few X-ray methods as used in practical routine inspection. Fig. 1 shows an X-ray equipment designed for the Babcock & Wilcox Co., Barberton, O., and used in the boiler shop for routine inspection of welded pressure vessels. A boiler drum is set up for inspection of the longitudinal weld. The high tension power plant is mounted on a movable platform and surrounded by a sheet metal housing, while the safety drum, containing the X-ray tube, is seen in front of the housing. The tube can be rotated about its axis and raised and lowered when desired. The control cabinet also is attached to the housing. For examination of girth welds, the vessel can be rotated about its axis. This equipment is notable for its compactness and mobility and is entirely original with Dr. St. John. So far as is known it is the first of its kind ever installed for this purpose.

Fig. 2, the inside of the sheet metal housing, shows the X-ray machine in action. The photograph is of an earlier installation in another factory. Fig. 5 gives the arrangement of tube, weld, film and lead shields of the machine shown in Fig. 1.

An exograph of two welds in a pressure vessel made of 2¼-inch plate stock is to be seen in Fig. 3, but in neither case can the weld be differentiated from the parent metal. Reference markers only tell where the weld lies. This is the proper type of weld for pressure vessels of Class 1, welded with Grade A welding, according to the proposed specifications for welded pressure vessels by the Boiler Code Committee of the A. S. M. E. Test plates of similar material from various sources have been examined and found to look much like this; thus it is evident that sound welds can be made. No manufacturer should fear to prove this to his customers, who might feel suspicious. One welding expert recently stated that it is more difficult to turn out a weld such as Fig. 4 than to make a good one. This particular weld was made purposely as bad as possible to study the meaning of the various spots showing up under the X-ray. Besides genereal porosity, slag inclusions and lack of fusion are apparent. Outside examination does not indicate what the inner conditions may be; therefore, welds must be X-rayed.

In Fig. 6, an exograph through a weld in 1⅛-inch stock; one observes three regions of varying densities. The lightest area represents the steel plate; the next darker area, the built-up metal on the surface of the weld toward the X-ray tube; and the darkest region, containing the heaviest cross-section through the weld,

*Fig. 8—Exograph of a good electric weld in thin plate stock*



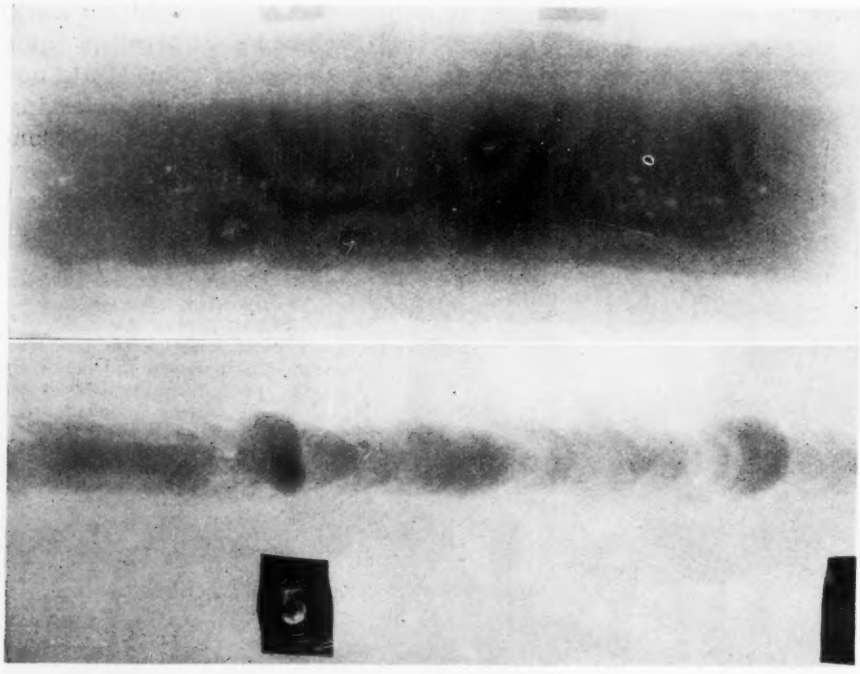


*Fig. 6 (Above)—X-ray of a weld in 1⅛-inch steel plate, various densities denoting built-up material on both sides of plate. Fig. 7 (Below)—X-ray of test weld properly made in ⅝-inch alloy steel plate. Weld is V-shaped, on one side of plate only*

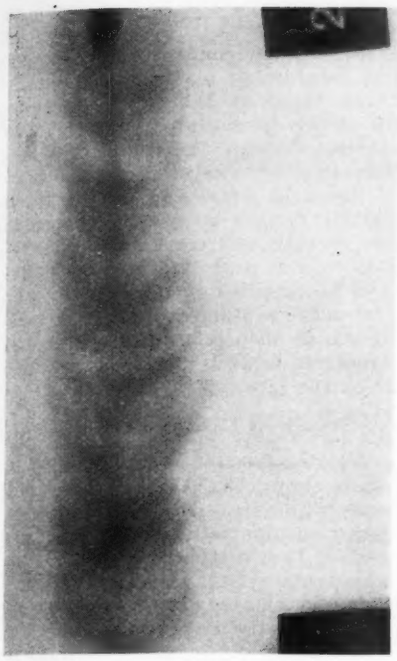


*Fig. 9—Exograph of a rather good acetylene weld. Shows excess metal over both sides of vee*

shows the excess metal on the plate side facing the film. Although this is a porous weld, it may be considered permissible for the service intended. Fig. 7 is an X-ray of a test weld in ⅝-inch alloy steel plate, V shaped, and welded from one side, as used in welding small tubings. This shows the final test plate, after the proper welding technique had been developed by previous X-ray tests.

### Tubing May Be Inspected

Welded tubing is shown in Fig. 11 and reveals a little bad fusion in region 2. From the diagram in Fig. 10, it is possible to identify the three exposures in Fig. 11. Here are the sheet iron plates, between which the tubing is rotated. These alloy steel tubings are now widely used in superheaters, oil crackeries, and various other high-pressure high-temperature services. This method of X-raying is employed for welded tubings with an inside diameter of 2½-inch and less; on larger tubings and weled pipes the films are placed inside behind the welded seams. Welded pipe lines can be examined in the field; the X-ray equipment being mounted on a truck with the X-ray tube extending over the pipe.

Fig. 6 represents a weld with a large areas of excess metal on both sides. This built-up weld metal was machined off afterwards and the plate X-rayed again. The new picture did not show defects which were apparent in the original exograph, but did show other defects which could not be observed in the first negative. Certain defects occurred in the built-up weld metal and therefore appear in this X-ray picture only. The defects were machined off before the second picture was made. This means that the newly apparent spots are of small size only; they are cavities of less than 2 per cent of the total thickness of the weld metal including the excess metal.

It may be of interest to learn something more about the limitations of X-ray inspection. In steel ranging from 1 to 3½ inches in thickness, defects down to 2 per cent of the total thickness of the material under investigation are observable in the X-ray picture; in steel less than 1-inch thick even finer defects can be detected. It does not take longer to examine 1 foot of weld than 1 minute to obtain a picture through 1½ inches of steel, whereas 3 minutes are required to penetrate 2¼ inches, and 20 minutes for 3⅛ inches. To keep within economical exposure limits, it is not advisable to examine thicker materials by means of X-rays, although 4 and even 5 inches of steel have been successfully X-rayed. Gamma rays from radium are being used on thickness above 3½ inches. The author calls X-ray pictures exographs, a word created to differentiate between X-ray photographs or shadowgrams and radium pictures called radiographs.

NOT only does the X-ray afford a nondestructive inspection of welds, but it also provides evidence which is valuable in controlling and improving welding technique. How results are to be interpreted in routine practice is explained in this article, prepared from a paper presented before a recent joint meeting of the New York sections of the American Welding society and American Society for Steel Treating. The author, Herbert R. Isenburger, is secretary, St. John X-Ray Service Corp., New York.

*Fig. 11—Exographs of welded tubing prepared as shown in Fig. 10. Region 2 (center) shows a little bad fusion*

### Gas Welds Require Inspection

All welds shown so far were made with the electric arc, but it is equally important to inspect gas welds. Fig. 9 shows an acetylene weld which is rather good. Notice the excess metal over both sides of the V.

Fig. 8 is an electric weld in thin plate stock. With the use of welded

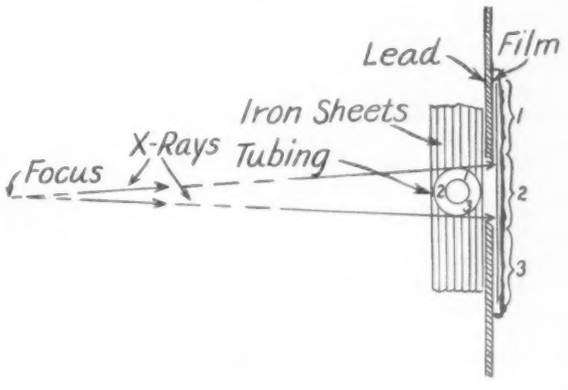



*Fig. 10—Radiographic arrangement for small diameter tube inspection*

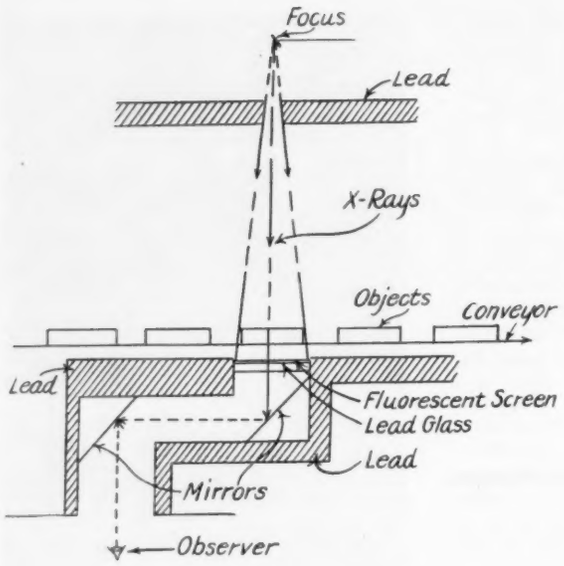



*Fig. 12—Schematic diagram of a properly designed fluoroscopic X-ray inspection arrangement*

building structures, the need for a thorough inspection arises; here, X-rays will be of important value. Critical joints which are made in the shop can be X-rayed before leaving the factory; on the other hand, welds made while the building is going up, must be inspected on the job.

X-rays have been used in routine inspection of welded beams in Germany, where an all-welded railroad bridge was tested by means of visual inspection in the field. The electrical equipment, dark room and living quarters for the operating crew were placed inside a railroad car. Whenever a suspicious place in the weld was discovered, an exograph was made at that point to verify the visual observation. A few words about fluoroscopic inspection should be injected since in some cases it is desirable to look through the metal rather than to take exographs. This has reasonable possibilities if the material is not thicker than ½ inch. Visual inspection on a fluorescent screen is the more rapid and economical method; radiographic examination with photographic film, however, should be preferred, since this is the more sensitive way.

### Film Shows More Defects

The film provides a permanent record, whereas the screen does not give a record. By the latter method one relies on the momentary judgment of the operator, and many defects which would show up on a film cannot be observed on the screen. The appearance of the various defects can be raised up to 1 per cent precision in radiographic examination of ½-inch of steel, but to not better than 4 per cent in visual inspection of the same thickness. Furthermore, special precautions have to be taken for the arrangement of the fluoroscopic observation stand, since otherwise the operator is exposed to the dangerous X-rays. A properly designed arrangement is shown schematically in the diagram of Fig. 12.

A most important field for X-ray inspection of welds lies in the aircraft industry. In Fig. 14 we see various fuselage joints of an airplane structure, the largest group of which comprises five pieces of chrome-molybdenum steel tubing and two reinforcing plates. The details of all joints in this assembly show up nicely, including a region near this joint where the tubing was unduly thin just adjacent to the edge of the weld metal and unduly thick slightly farther away. In some parts fine porosity and cracks were observable in the negative, but these details become lost in reproduction.

Proper equipment has been designed to inspect complete fuselage structures *in situ*, that is, in the field or on the jobs.

*Fig. 13—X-ray photograph of a weld in cast steel. Weld (dark region) is fair; casting (light region) is bad*

### Repaired Castings X-Rayed

Welding frequently is employed in repair shops. Fig. 13 shows two pictures made from one and the same negative, illustrating a weld in cast steel. The casting had a thinner cross-section than the weld metal, and was therefore somewhat overexposed in the negative. Altogether, it is a bad weld in a bad casting. In general, it is not deemed advisable to repair cast metal by welding.

X-ray inspection of various welded structures in place has been employed successfully in Germany, for the examination of locomotive fire boxes, boiler drums, ships and railroad bridges; in England, for the examination of aircraft materials; and in this country, for the inspection of ordnance structures and pressure vessels.

The cost of suitable X-ray installations and their operating expenses depends a great deal on the material to be examined, its thickness, conditions and mobility. A conservative estimate of operating cost is $3.00 to $5.00 per hour, depending on the way the equipment is written off. X-ray equipment, however, should not

(*Concluded on Page* 38)

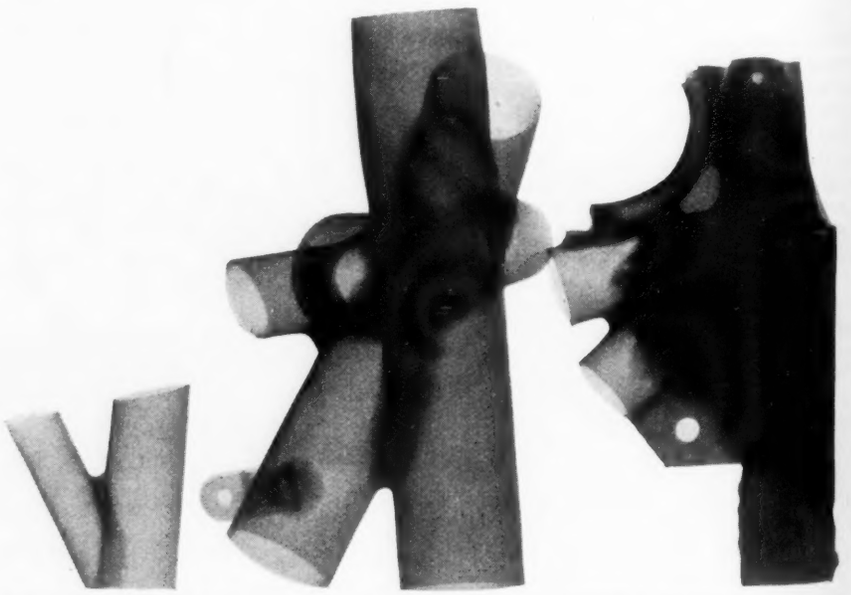


*Fig. 14—Exographs of various welded joints in an airplane fuselage. Aircraft construction is an important field for X-ray inspection*

# Dross Formation Is Minimized by Precautionary Measures

BY K. P. ROLSTON
Acme Engineering Co., Pittsburgh

## Part III

OPERATION of galvanizing kettles is impossible without the formation of a product of zinc alloyed with iron and known commercially as dross. In the accompanying article, the third and concluding installment of a series, the author submits various means of minimizing this formation and discusses the design and care of baskets used in the centrifugal process of coating small articles. Preceding installments were published in the April 2 and April 16 issues of STEEL.

WHILE the bureau of standards has established the melting point of zinc at 786.9 degrees Fahr., the melting point of the commercial product may vary due to impurities, usually being lower. Laboratory tests have established that the melting point of an alloy cannot always be inferred directly from the melting points of its component elements.

The chemical symbol of zinc in Zn. It has a specific gravity of 6.86 in a cast state. The weight of 1 cubic inch of water at 62 degrees Fahr. is 0.0361-pound. If the specific gravity of zinc or any other material is known, the weight of 1 cubic inch of this material can be found by multiplying its specific gravity by 0.0361. Cast zinc, therefore weighs 6.86 x 0.0361 or 0.247646-pound per cubic inch and 428.1 pounds per cubic foot.

### Reduction Is Possible

Hot-dip process galvanizing cannot be accomplished without the formation of zinc dross in the galvanizing kettle. This formation, however, can be minimized by precautionary measures that not only will effect a saving in zinc but greatly will increase the life of the kettle. Zinc dross is the product of zinc which has become alloyed with iron.

Only a small percentage of iron is required in the zinc to cause a decided precipitation of dross to the bottom of the kettle. High kettle temperatures contribute materially to the formation of dross, and to minimize this formation temperatures never should register higher than 870 degrees Fahr., unless the work to be galvanized is of such a nature that higher temperatures are absolutely necessary. Temperatures above 870 degrees Fahr. rarely are needed, when the galvanized articles are to be centrifuged.

Zinc dross forms with great rapidity after passing 870 degrees Fahr. With an advance of only a few degrees the formation is increased about 100 per cent. This condition even becomes more acute as the temperature increases and at a kettle heat of 900 degrees Fahr., the formation is so marked that quantities of dross remain in suspension within the zinc bath. Either the passage of baskets through this high-temperature metal, or agitating it in any manner causes this dross, in the process of formation, to attach itself to the work being coated, and defeat every effort to get a good finish.

The formation of dross arises from two sources. The work being coated supplies a medium from which microscopic particles of iron become detached and mingle with the zinc, forming a metallic combination that has a higher specific gravity than the pure zinc and, therefore, gradually settles to the bottom of the kettle, unless agitation or excessive temperatures prevent. The kettle walls also supply a fertile area for the erosion of iron particles. With the application of heat on the exterior of these walls a reaction takes place which gradually undermines the wall structure as the zinc dross formation proceeds. Kettle operators should guard against hot spots on the kettle wall. This is equivalent to high-temperature kettle operation; in fact, more dangerous because it invites complete disintegration of the kettle wall within a small area represented by the overheated zone. A hot spot may completely break down a heavy kettle wall in the course of two or three days, causing loss of production, raw materials and equipment.

### Stickers Destroy Coating

When galvanized parts adhere to one another, attached by the cementation of the coating, they are called stickers. This is a condition that destroys the coating on one or all of the articles so attached, in the operation of parting them. Large objects rarely stick to one another on account of their individual weight, but even these pieces are not immune from this soldered effect, when they pile on one another in the quenching bath.

Most quenching is done in clear water, or water containing a small percentage of some other substance which is added to improve the finish of the coating. The quenching solu-

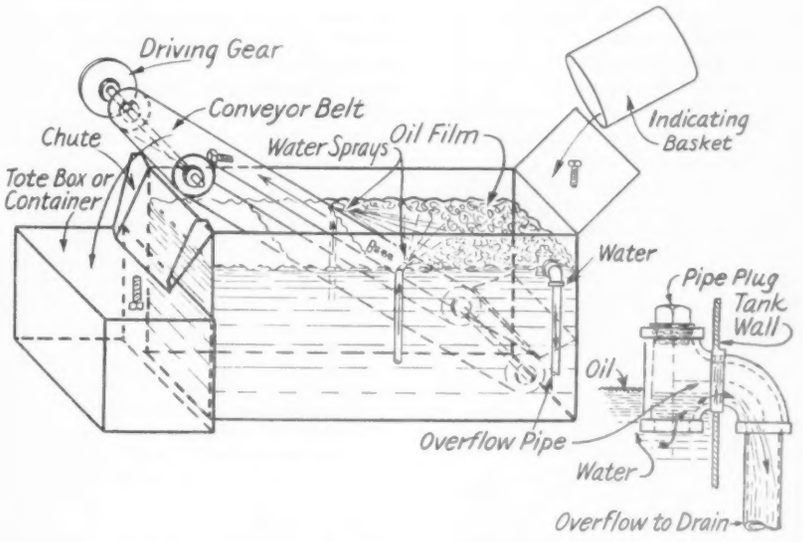



*Fig. 14—Quenching tank which permits removal of articles from bath without coming in contact with the oil film*

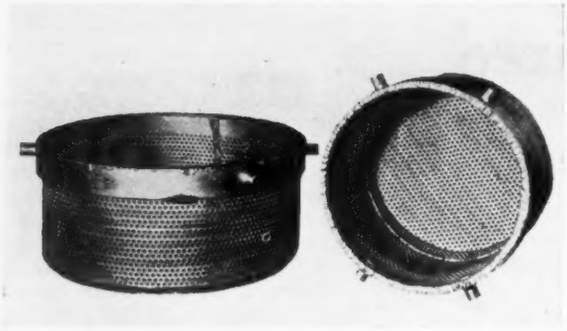


*Fig. 15 — Shallow basket without handle for cable rings or similar pieces that cling together*

tion should not be kept at a low temperature, as practice recommends that the water be kept as warm as possible, without causing stickers. The temperature of the water has a direct influence on the presence of stickers, and high temperatures in the quench, combined with high temperatures in the zinc kettle form a combination that is sure to result in an undesirable quantity of stickers among the finished products.

In regulating the temperature of the water it is best first to heat the bath to the desired temperature before the quenching of parts, and to maintain this temperature within certain limits by regulating the flow of the cold water supply to balance the heat absorbed from the work.

### Oil Used on Surface

On malleable pipe fittings and various other work, good results have been obtained in the quenching operation by placing a film of oil on the surface of the water. This improves the quality of the finish and the article has a better color and shine than if dipped in plain water. The objection raised by some operators to the use of oil is that it leaves a film on the surface of the piece, which is not desirable. If the oil bath is properly arranged no film of oil will form on the article, and the finish will be clean and bright, provided that all other galvanizing conditions are right.

Fig. 14. shows a typical installation of quenching tank, with inlet and outlet pipe apportioned to give the best results when an oil film is used on the top of the quenching water. The object is to provide an ample supply of clean, cool water by which the temperature can be controlled in the quench, and at the same time permit the removal of the articles from the bath without coming in contact with the oil film. Furthermore, it is necessary to use a specially designed overflow pipe, which will allow the removal of excess water but will trap the oil on the top of the tank.

The incoming water is sprayed across the top of the quenching solution, with sufficient velocity to part the oil film, and cause a clear water area at the desired point on the surface. The pieces, after coating, are dipped into the quench through the oil film and removed at the area where the oil film is forced from the surface by the pressure of the incoming supply. In hand operation this is accomplished with a sweeping motion, allowing the parts to remain only momentarily in the quench. This has particular reference to pipe fittings or similar malleable castings. In mechanical galvanizing it is advisable to provide a system by which the articles may be dumped into the bath through the oil and removed mechanically by a conveyor belt in the oil-free zone, where the incoming spray of fresh water prevents the surface oil from becoming attached to the coating.

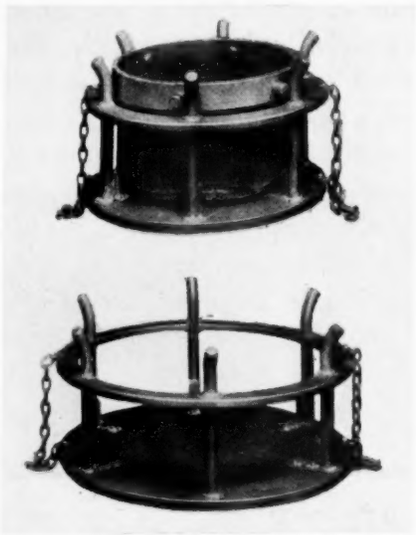


*Fig. 16—Standard cage design equipped with chain cleaners for loosening zinc from shield*

Stickers are formed in the quench by the articles coming in contact with one another before the quenching liquid has had sufficient opportunity to reduce the surface heat to the point where the coating becomes set. It is necessary, therefore, to chill the coating before the pieces settle upon one another, otherwise they will stick.

In mass production it is advisable to depend on mechanical handling equipment wherever possible. The quenching problem ordinarily can be solved by adopting apparatus designed for speed variations, so as to give the proper handling time to each classification of work.

### Blemishes Readily Noticed

Dross blemishes on centrifuged pieces are most noticeable on steel materials, such as threaded bolts, or smooth surfaced stampings or forgings and machined articles. On gray or malleable iron castings the surface of the casting usually is rougher than on articles of steel, and the dross blemish is not so pronounced. In most cases, it will not interfere with the use of the piece, because fits as a rule are not required where rough castings are concerned. On bolts and similar pieces, however, the presence of dross in granular form is particularly objectionable. Granules in the threads will prevent nut fits, and also render unsightly the appearance of the bolt shank and the head.

Sometime dross will accumulate on the baskets while being passed through the kettle. This will permit the dross to float into the interior of the basket where it attaches itself to the contents. The theory has been advanced that certain grades of steel used in basket construction become soluble in molten zinc or possess an abnormal affinity for dross whereby they take up a mass of this material which clings to the surface of the basket in defiance to centrifugal action. There seems, however, to be no basis for this theory as it has

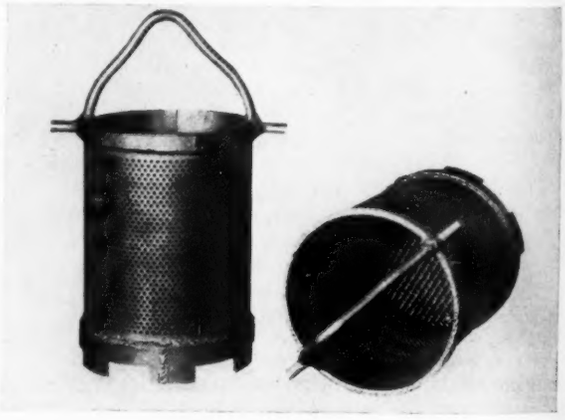


*Fig. 17 — High-sided basket which prevents the ejection of material during centrifuging. The design is suitable for bolts*

been shown that the most direct cause of dross accumulation on baskets is due to these baskets having been over-pickled or burned in the pickling operation.

Iron salts or oxides in the form of powder which cling to the surface of over-pickled basket walls immediately will form dross on the surface of the walls and this collection of dross will be increased materially with each successive passage of the basket through the kettle. The surface of the basket has a decided affinity for zinc but it is the oxides attached thereto and not the base material itself. Any steel that responds to acid attack will cause dross formation on its surface if over-pickled. The remedy for this condition is to pickle centrifugal baskets with care and as frequently as experience dictates.

**Correct Temperature Important**

Excessive kettle temperatures cause dross to remain in suspension in the kettle. Zinc dross is in formation at all times during the operation of the kettle and the amount in suspension depends largely on the temperature of the kettle. It cannot be reiterated too often that for the successful galvanizing of machine bolts and kindred articles the kettle temperature should never exceed 870 degrees Fahr.

The kettle should be of sufficient depth to prevent the baskets from agitating the dross in the act of precipitation. The maximum of molten metal between the bottom of the basket and the dross line is recommended. When the dross in the kettle becomes to high the kettle should be drossed without delay, although this operation is best done at the close of the day's work, to permit the suspended dross to settle before continuing kettle operation.

Centrifugal action has little effect on granules of dross. Should dross become attached to the article, it is practically impossible to remove it by any means, and hence methods of prevention should be established.

In centrifugal galvanizing, the term cold splashes refers to articles that appear to have splashes of metal adhering to the object superimposed on the regular coating. This will be found either on the exterior or interior of hollow pieces, depending on certain conditions.

Cold splashes usually are caused by attempting to operate with the zinc at too low a temperature. Articles cannot be galvanized successfully unless the kettle temperature is sufficiently high to permit the extraction of all the excess metal in the basket. When the temperature is below the minimum point, then the article itself does not contain sufficient heat to permit the complete throw-off of zinc, and the loose metal that detaches itself from one object becomes attached to a nearby article and freezes to its surface. This

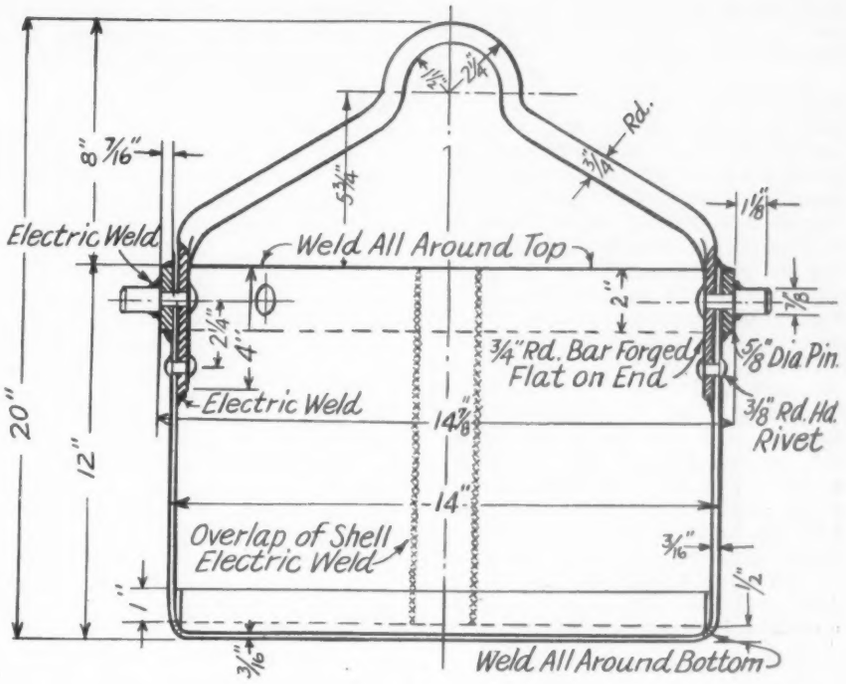



*Fig. 18—Details of a 50-pound basket which may be operated up to 1000 revolutions per minute*

gives the pieces an objectionable appearance which can be avoided through raising the temperature in the kettle.

Sometimes many articles in a basket will be centrifuged properly while some will show cold splashes. On examination it will be found that the center articles are those exhibiting proper extraction while the outer ones show cold splashes on the sides facing toward the center of the basket. The splashes in this case are caused by the excess metal removed from the center pieces attaching itself to the inner surfaces of the pieces arranged around the outer shell of the basket.

Records should be kept of the proper temperatures to maintain when doing various classifications of work, and these records should be consulted before proceeding with duplicate or similar orders. Where quantities of the same material are coated daily or periodically, it will be found possible to memorize these details. In any event, for best results, it is important that a systematic program be adopted.

Centrifugal baskets are of many designs. Both square and round baskets are used extensively. Any real advantage in the use of square baskets does not appear, and the cost of manufacture is about the same as the round type. Square baskets offer difficulties in handling, because more skill is required to place them in the cage of the centrifugal machine on account of interference of the corners.

Baskets should be made about three or four times as large in cubical content as the volume of the load to be carried. The side wall should be high, so that in centrifuging the contents cannot climb up and over the edge and thereby become damaged.

**Lugs Are Unnecessary**

Square baskets do not require lugs on the outside to act as drivers since the cage fits close enough to mesh with the corners. Round baskets, however, require some type of lug, which finds contact with two or more of the vertical members of the cage.

The clearance between basket and cage should be held to the minimum for practical operation. Clearance is necessary, however, because the baskets become bulged after a period of usage, and otherwise would bind on the uprights. Too much clearance will throw the basket and load off center, and set up excessive vibration.

The number of baskets required for economical operation depends on the length of the kettle, the number of baskets "cooking" within the kettle at one time, and the time required to load these containers. The number used in centrifugal galvanizing should be held to the minimum actually required to complete the cycle of operations. No accumulation of spare baskets on the floor should be permitted. The object in using the fewest number of baskets is to prevent heat losses by radiation in the atmosphere while awaiting a recharge. Heat thus lost while the containers are exposed to the air needlessly must be absorbed again from the zinc in the kettle on the next passage through the metal.

This places an additional burden on the heating facilities without any benefit in galvanizing.

In ordering baskets, it is best to furnish the basketmaker with a working drawing of the requirements, showing all the dimensions. A drawing of this type should be supplied every time an order is placed for baskets, and under no circumstances should a sample basket be used as a model. In plants where numerous baskets are used, it has been found that dimensional variations have crept into the basket-making program, when sample baskets are used. The chance for error is apparent. Different samples will be used at different times. Sometimes old, worn baskets are used as samples, and the basketmaker must guess at important dimensions. Baskets too large or too small will not work properly. There is only one correct size basket for each size cage, and these dimensions must be maintained.

**Acid Removes Formation**

Baskets should be pickled at frequent intervals to remove the zinc coating. Precautions should be taken not to overpickle baskets as this is a prolific source for dross formation, as previously explained in detail. New baskets always should be pickled before being placed in operation. Soft steel should be used in their construction, and they should be braced with reinforcing bands at top and bottom. Welded construction is preferable.

On exacting work, which might have a tendency to be flung out of the basket, a lid with a catch to hold it in place is recommended. Lids are an exception, however, and never should be used unless necessary. Baskets of the handle type as well as those without handles are used successfully in centrifuging operations. Small stampings or wire-formed articles, which cling in a mass, are best handled in a basket without any obstruction over the top. On the regular run of bolts and nuts, etc., baskets equipped with a bale handle are recommended.

**Perforated Sheets Recommended**

Wire mesh baskets are not substantial and therefore are not recommended for general use. Perforated sheets rolled or formed into the proper shape make the best and most durable container. The perforations need not be as close together as might be supposed, because the action of centrifuging will extract the zinc rapidly and effectively if all mechanical conditions are correct. The diameter of the perforations is proportioned to the size of the work being centrifuged. In handling nails or small screws it is best to use baskets with side walls punched out in loops but no metal removed. This gives an outlet for the zinc but minimizes the slotted openings.

Perforations should not be made where the bands are attached. This is particularly the case where welding is employed for attaching these parts. The welding should be done on solid metal, and a substantial fillet of welded steel provided for reinforcement.

Obviously, baskets will wear out after being in service for a long time. The life of these containers depends on the usage and the amount of pickling to which they are subjected. When the side walls become too thin the baskets either will bulge or burst, thus making them useless for further operation.

# Replacing Old Machines Will Break «Vicious Circle» of Delayed Buying

EDITOR'S NOTE—The following comment, delivered on the occasion of a radio salute to the machinery industry, is by Carl A. Johnson, president, Gisholt Machine Co., Madison, Wis., and also president of the National Machine Tool Builders' association, Cincinnati. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., sponsored the program which was broadcast the evening of April 26 over 29 stations associated with the National Broadcasting Co.

IF THE manufacturers of America could say honestly today, "We are buying now," they would not need to say to their consumers, "Buy now," and the clouds of depression would soon pass.

There is a way by which American industry could start a series of buying movements with profit to itself, thereby giving employment to hundreds of thousands of men now out of work and taking effective steps toward the breaking of the "vicious circle" of delayed purchases. That way is to replace with modern, improved machinery the obsolete, out-of-date machinery now being used for production.

The need for such replacement is shown by the proved fact that 48 per cent of all metalworking machinery in this country is over 10 years old and, generally speaking, machinery 10 years old is out-of-date. A machine becomes out-of-date just as soon as another machine is developed that will do more or better work.

It costs more to use an obsolete machine than it costs to buy a new one. Hence, the user of obsolete machinery pays for the new machine in waste, but neither he, nor his workers, nor his stockholders get the benefit.

It has been shown conclusively many times over that time-saving machinery raises wages, creates more jobs, and makes available a greater choice of jobs for this and for each succeeding generation of workers. We have, in fact, attained our present standards of living only by the thoroughly American process of constantly improving our machinery, and we can maintain and improve these standards only by rigidly adhering to this policy.

**Management Should Take Lead**

It has been the practice in most industries for the works manager to ask his management for new machines and be compelled to argue for them. The roles should be reversed. Pressure for the replacement of out-of-date machinery should come from the management down and not from the works up.

At least once a year, management should procure a list of machines in use classified by age. Then the works manager should be compelled to prove that any machine over 10 years old still can be used profitably. This simple procedure would disclose some startling leakages of money in almost every plant.

Since a plant equipped with modern machinery is better security for loans than an obsolete plant, bankers have begun to inquire into the condition of a plant's equipment with the same care they now give to its financial statement.

A management keeping obsolete machinery too long in service will in time find itself at the mercy of an up-to-date competitor. Hence, stockholders also are interested deeply in this same subject. A little jingle heard recently is truly a constructive slogan for all American industry:

"Old machinery in the shop
Shows obsolescence at the top."

# X-Ray Inspection Methods for Welded Joints

(*Concluded from Page* 34)

be installed until the adaptability of the method to the problems in hand has been demonstrated, and not then unless the benefits to be derived justify the investment. This would seem to make the tool unavailable to the organization with a small problem or a temporary difficulty, but fortunately some of the pioneers have installed equipment and are prepared to take care of such cases, so that it is possible to evaluate any proposed use of radiography without great expense. On the other side, an X-ray installation may pay for itself within the first year.

# Welding Makes Progress in Shipbuilding Field

ALTHOUGH welding has been making steady progress in the fabrication of ships during recent years, one feature, the foundations for ship machinery, for some unexplained reason largely has been overlooked, according to engineers who discussed this subject at the annual meeting of the American Welding society at New York, April 22-24.

G. H. Moore Jr., Newport News Shipbuilding & Dry Dock Co., Newport News, Va., presented a paper on welded machinery foundations for ships which gave in considerable detail the results of the extensive experience of his company. Foundations of the welded type have many advantages, according to Mr. Moore. They effect a saving in weight, eliminate connecting angles and are usually less expensive.

Use of welded construction in foundations for auxiliary equipment on shipboard offers to designers the great advantage of not having to complete plans for such auxilaries at the time the main fabricating contracts are made, according to James W. Owen, Welding Engineering & Research Corp., New York. Work on the main structure of the ship, he said, could continue to completion and the location of the auxilaries then could be determined as it was easy to weld these in place at any desired points. Often the design of auxiliary equipment is changed after the first plans have been completed and with riveted construction this may mean considerable alteration.

### Costs Are Reduced

Captain Hermann Lottman, superintendent of construction, Wilhelmshaven navy yard, Germany, gave a description of the extensive welding in ship construction in Germany today. He said that at his yards they found welding construction reduced the cost of ships by about 3 per cent and that it reduced the weight in some cases as much as 12 per cent. He said, "In Germany we will never go back to riveted construction." At the navy yard at Wilhelmshaven 12 welded destroyers and three cruisers are nearing completion and nearly 200 arc welders and many gas welders are at work.

Welded boilers for navy scout cruisers were described by J. C. Hodge, Babcock & Wilcox Co., Barberton, O. The fact that the navy has accepted specifications covering welded boilers is an outstanding development, for heretofore the navy has been reluctant to give its stamp of approval on the welding of many less vital factors in connection with its ships. Credit for this acceptance, according to Mr. Hodge, must be given chiefly to the nature of the specifications and tests for welding work.

### X-Ray Test Important

Specifications were summarized in a table and covered thermal stress relieving, a tension test, a bending test, Charpy impact test, a minimum specific gravity of welded metal of 7.80, a chemical analysis covering manganese, phosphorus, sulphur, carbon and nitrogen (as iron nitride), macroscopic and microscopic examinations, a hydraulic test to twice the working pressure and an X-ray examination of joints. This last item is one of the important features and according to discussion of the paper it was probably this one item more than anything else which caused the navy department to permit welding construction. Twenty-four boilers were supplied and 23 passed the X-ray test successfully.

C. W. Obert, Union Carbide & Carbon Co., New York, who presided at the shipbuilding session said that the important and encouraging thing in the boiler construction for the scout cruisers was the fact that specifications have been worked out so carefully that the navy without hesitation has accepted them and put its stamp of approval on work conforming with these specifications.

Dr. Ancel St. John, St. John X-Ray Service Corp., New York, in discussing the question of X-ray testing said that it was common practice to detect a defect of 2 per cent of the thickness of the shell by this means. He said defects had been detected as small as 1/16-inch in 2¼ and even 3-inch plates. Mr. Owens said that the use of the X-ray or some other form of nondestructive test was undoubtedly invaluable at the present time in the construction and acceptance of large heavy-duty boilers. He said that the boiler code allows the use of higher stresses in the design of joints that are X-rayed, and that this alone would go a long way toward paying the expense of examination. He spoke of the gamma ray and magnetic tests as worthy of consideration.

### Specify Results Only

In response to a question regarding further details in the actual welding procedure on the boilers constructed for the cruisers Mr. Obert replied that the boiler code committee first had tried to specify these details but found that this often conflicted with proprietary rights or with methods which were more or less secret, and that this first plan had been abandoned entirely in favor of one specifying results only.

Discussion as to cost of X-ray testing brought out the opinion of one investigator that, for 1-inch plate, welds could be X-ray examined for 50 cents per lineal foot and that X-ray examination is commercially feasible at present in steel plates up to 3½ inches thick. The cost for this heavy plate averages about $6 per lineal foot.

# Welding Society Membership Now at Highest Point in History

MEMBERSHIP of the American Welding society now stands at 1424, the highest in the history of the society, according to E. A. Doyle, Linde Air Products Co., New York, who in his presidential address at the annual meeting of the society, April 22-24, outlined progress made during the year, calling attention to the fact that over 100 cities in the United States now permit welding in building construction, New Orleans being the latest addition to the list.

Mr. Doyle was re-elected president and other officers were elected as follows: senior vice president, F. P. McKibben, General Electric Co., Black Gap, Pa.; divisional vice president for Pacific coast, William A. F. Millinger, Shell Oil Co., Los Angeles; divisional vice president for southern division, H. C. Price, Welding Engineering Co., Bartlesville, Okla.; directors at large, A. M. Candy, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.; J. H. Deppeler, Metal & Thermit Co., New York; E. H. Ewertz, consulting engineer, New York; and A. E. Gaynor, J. A. Roebling Sons Co., New York. Mr. Gaynor is a new member of the board, the other three directors having been re-elected.

The Samuel Wylie Miller Memorial medal which is awarded each year for outstanding achievement in welding was this year awarded to Eric Harold Ewertz, former president

of the society, for his pioneering in the development and application of arc welding.

At a joint meeting of the American Welding Society and the pressure piping code committee of the American Standards association, a new code for pressure piping was presented for public discussion for the first time.

# Light Concrete Reinforcing Obtainable by Welding

IN STRUCTURAL work which is intended to be covered with concrete for protection it is often the practice to ignore the added factor of strength due to the concrete, according to D. C. Tennant, structural engineer, Dominion Bridge Co., Lachine Locks, Que., in a discussion at the annual meeting of the American Welding society. With riveted construction it is usually difficult to design the steel members light enough to act as concrete reinforcing, whereas this design feature may be secured readily in welded construction. He described recent work of his company in which a light form of girder made up of welded angles formed the skeleton work around which concrete was later poured. One type of floor construction used light steel joists on welded trusses in place of heavy beams.

Answering discussion Mr. Tennant said his company had a committee working on specifications for standard joints, although he said he felt it was a mistake to carry standardization too far in welding, as one of the chief merits of this form of fabrication was the opportunity for variation and originality in design. He said nearly all of his company's welds were ⅜-inch or less and that they had adopted ⅜-inch as the largest size for a single layer weld.

A remarkable new chart for determining stresses for welded connections was presented by Odd Albert, bridge designer, New Jersey Highway commission, East Orange, N. J., in a paper on eccentric welded connections. This diagram is essentially three diagrams joined together, making it possible to determine quickly values of maximum stress in tension, bending and shear for different types of welded joints.

H. H. Moss, Linde Air Products Co., Nek York, presented a paper describing tests of gas welded structural joints in which he stressed the importance of disqualifying incapable welders. Next in importance he placed the question of proper design and he said that with these two problems solved reliable practice was possible. He cited the case of large all-welded sea cranes recently built at the Brooklyn navy yard, pointing out that in extensive investigation preceding the construction of these cranes, test specimens of typical welded joints were found to be weaker than the same joint in actual practice.

Large savings in maintenance costs in steel mills have been effected by the development of well equipped reclamation departments, according to John B. Tinnon, sales manager, Metal & Thermit Corp., New York, who presented a paper which had been prepared by J. H. Deppeler, chief engineer of the same company.

Equipment in such a department should provide for all types of electric, gas and thermit welding, as each has its particular application. Thermit welding is used extensively for the repairing of heavy shafts, large steel frames of machines, frames in cinder ladle carriages, ends of blooming mill rolls, heavy pinions, and for the building up of wabbler ends.

### Study Points to Saving

Recently some radical changes have been made in the use of thermit welding which have resulted in a saving of 60 per cent of the amount of thermit metal required. This saving has resulted from a careful study of conditions during welding of large shafts. At first the problem of thermit welding of such parts was approached from a foundryman's point of view, using large excess of material to feed shrinkage. Investigation showed that conditions in thermit welding were almost the reverse of those encountered in ordinary foundry practice, that is, the cast material cooled from the center outward rather than in the usual reverse order.

Considerable discussion centered around this particular point, but Mr. Tinnon explained that the narrow section at the center and the large mass of steel on each side resulted in a rapid dispersion of heat which actually caused the center cast metal to freeze while the surrounding metal was still molten.

Ira T. Hook, research engineer, Amercan Brass Co., Waterbury, Conn., described elaborate tests and experimental work in the welding of different copper alloys. For the metallic arc method of welding, he said that certain definite alloys stood out as most readily weldable. Of these he mentioned particularly phosphor bronze, containing 95 per cent copper and 5 per cent tin with 0.03 per cent phosphorus as deoxidizer; and everdur, containing 96 per cent copper, 3 per cent silicon and 1 per cent manganese.

One engineer discussing this paper told of overcoming the development of shrinkage cracks in welding everdur inserts in steel plates. These cracks were eliminated by welding the inserts into light section steel frames and later welding these frames into the large plates.

*STEEL TREATERS WATCH HOW IT'S DONE*

*A group of members of the New Jersey chapter of the American Society for Steel Treating, students in a course in heat treatment, metallography and use of iron and steel, stare intently at the interior of a heat treating furnace while the camera snaps. This practical course of instruction is designed to present the fundamentals of the industry to the layman in such a manner that he will be in a better position to grasp the knowledge to be gained from papers presented at monthly meetings of the chapter*

# Flue Dust Returned to Stack by Compressed Waste Gases

NUMEROUS rotary compressers have been installed by European blast-furnace works for compressing blast furnace gas to 57 to 100 pounds per square inch, according to *Demag News*. The compressed gas serves to blow flue dust into the stack through the shaft wall, according to a recently devised process. Rotary compressors are suitable for this purpose on account of their uniform delivery.

The rate of flue dust production depends chiefly on the working of the furnace and the grading of the charge, ranging from 110 to 440 pounds or more for each ton of pig iron. Flue dust has almost the same iron composition as the charge except that it contains up to 10 per cent of fuel in addition.

### Two Methods Are Employed

The iron in the flue dust extracted by the rough cleaning process ultimately is returned to the stack where it participates in the process of reduction. Two methods of procedure are followed. Either the dust is returned to the furnace in a damp condition or it is prepared specially by agglomerating or sintering before being employed in the charge.

Attempts have also been made to blow flue dust into the hearth zone itself through the blast connection and tuyeres but the plan proved impracticable. The Heskamp method of returning flue dust to the blast furnace proceeds along totally different lines (the patents, both German and foreign, are held by Messrs. Vereinigte Stahlwerke Aktiengesellschaft, Duisburg). Experience shows most of the flue dust is derived from the upper layers of the furnace charge, despite the percentage of metal in the dust increasing rapidly with the depth owing to the lumps of ore rubbing, or breaking up, etc., as they descend. This is due to the filtering action of the superimposed layers which causes to settle there the dust entrained and conveyed upwards by the rising current of gas. Obviously, therefore, if the dust can be blown in at some level sufficiently far down in the furnace charge, there will be no danger of the dust being carried up again into the waste gases.

Compressed air is useless for the dust blast because a new fire zone with its substantial local rises of temperature and disturbing effects upon the working of the furnace must be avoided where the dust enters. Recourse is had to the waste gases of the furnace to form the conveying medium, these gases being without oxygen and nonoxidant. Taken from the pure gas pipe, the volume of gas needed undergoes a final cleaning before reaching the compressor unless pure enough as it arrives.

The rotary compressor delivers into a pressure tank that supplies the blast-furnace feed pipe. The compressor has two stages working in series to give the gas a head of 57 to 100 pounds per square inch. The size of the compressor depends on the number of blast furnaces and the dust yield from each furnace.

From the collectors the flue dust draws off into a dust pressure chamber, passing through a screen, designated *e* in the accompanying illustration. Coarse screenings go back, ultimately, to the furnace with the mixture of ores and fluxes. The pressure chamber filled, the blast-furnace waste gas previously compressed proceeds to blow the dust into the lower part of the stack. Continuous service can be obtained by providing two dust pressure chambers, one to be filled while the other chamber is being emptied.

### Large Tonnage Returned

At the Rurort-Meiderich establishments of the Vereinigte Stahlwerke A.-G., the yield of coarse throat dust amounting to about 15,000 tons per month, is being returned to the six blast furnaces in this way.

The cost of feeding the raw dust is relatively small, being approximately equal to the former expenditure for drawing off the dust into lorries from the dust collector, carrying it to the briquetting plant, and thence to the ore bunkers. Besides making operations much simpler and cleaner, the new procedure saves the expense of making up the raw dust into lumps or pieces, and the lorries formerly used to carry away the raw and dressed dust are free now for other purposes. Such direct-utilization of the flue dust by blowing it into the blast furnaces also reduces the cost of the ore-and-flux mixture, and the aggregate savings soon balance the cost of the gas compressing and dust conveying plant.

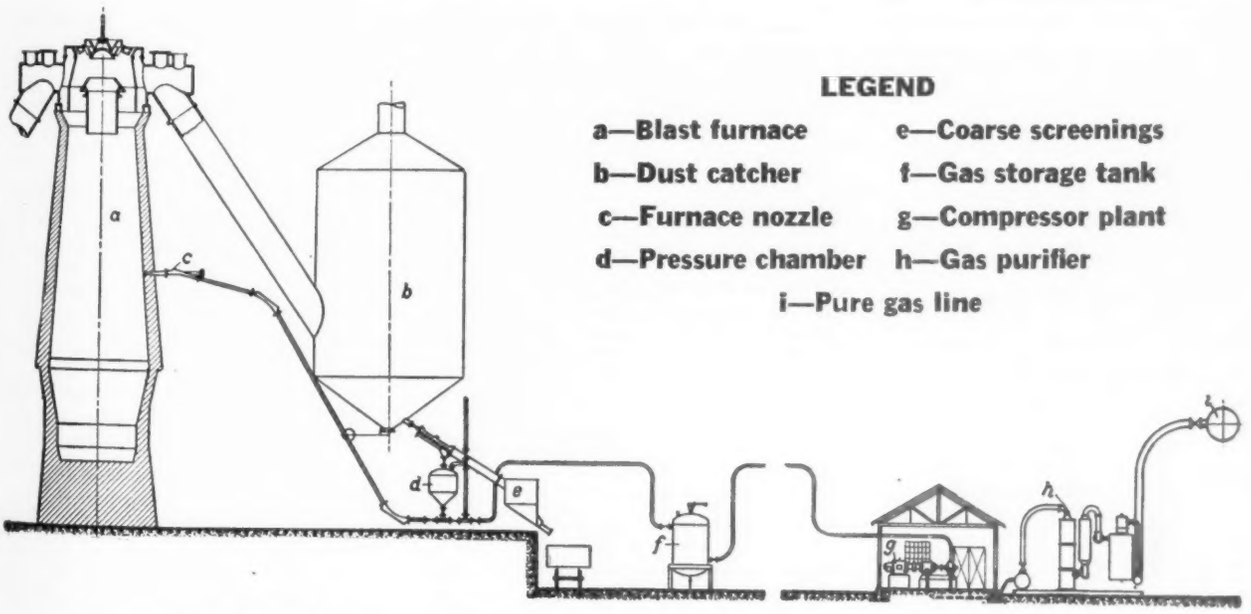



*Diagram showing method and equipment used in Germany for returning flue dust to the blast furnace*

# Questionnaire Reveals Welding Not Serious Competitor of Castings

A QUESTIONNAIRE sent by the Steel Founders' Society of America Inc. to various steel foundries has indicated that 88 per cent do not consider welding a serious competitor while 12 per cent do. Of the total, 23 per cent believe that welding may or will become serious competition while 77 per cent do not. The large majority believe welding will enjoy a normal growth and will have a legitimate field of application while 25 per cent are of the opposite opinion.

Despite a moderate increase in operations and bookings, the steel castings outlook remains unfavorable. The improvement is ascribed largely to seasonal influences and offers little hope for a maintenance of current rates over the next 30 to 60 days. Operating rates are now at less than 50 per cent of capacity. These facts were revealed by members of the Steel Founders' society holding their regular annual meeting in Pittsburgh, April 22-24.

Builders of heavy steel mill machinery continue to report best operations; foundries serving the railroads are running at slow rate; and a fair gain is reported by companies dealing with the machine tool industry. In most cases wage scales were given as unchanged.

### Committees Report

The society's special group on recommendations to designers approved a final draft of the brochure explaining the fundamentals of steel casting design for engineering students of technical schools. This draft will be transmitted to the joint committee of the American Foundrymen's association on design. The technical research committee considered the drafting of new specifications covering carbon steel castings. A special committee on the steel casting handbook started work laying out the structure of the book and discussed the assignment of subjects and the collection of material. The book is expected to be published within the next year and will constitute a nontechnical picture of steel founding, including operating problems and designs of steel castings, for the use of buyers, engineers and designers.

Granville P. Rogers, managing director of the society, reported on some activities of the organization since its last meeting in March. These activities included a report on the compilation of specifications for manhole frames and covers. Investigations of the comparative value of cast and forged steel for railroad car center plates have been conducted and the data presented to members. Survey work included a tabulation of gas rates and costs for steel foundries in various sections of the country and a survey of tax data and financial information.

The midsummer convention and the last meeting of the society until early fall will be held at French Lick Springs hotel, French Lick, Ind., June 16-18. The first meeting of the engineering and metallurgical division of the society also will be held at that time.

## Zirconium-Manganese Alloy Improves Castings

A new alloy of zirconium, manganese, and silicon, which increases the strength of gray iron castings without affecting their machinability, has been developed by the Electro Metallurgical Sales Corp., New York. Tensile, transverse and hydrostatic tests have indicated that the treatment of cast iron with this alloy leads to a better grade of casting.

Laboratory tests of tensile and transverse strengths of numerous specimens show that consistently high values may be expected. A series of coupons, having in each case a cross-sectional area of 1.12 square inches, yielded an average tensile strength of 34,000 pounds per square inch, while the actual values ranged from 29,100 to 37,950. Hardness figures varied between 212 and 228 on the brinell and from 96 to 99 on the Rockwell B scale. In every instance a good, gray iron, fine-mottle fracture occurred ½-inch from the center.

Transverse tests on untreated bars, 1 inch square and 12 inches between centers, showed an average strength of 3700 pounds per square inch and a deflection of 0.153 inch. Bars treated with zirconium-manganese-silicon had a maximum strength of 4200 pounds per square inch and an average strength of 3770 with an average deflection of 0.154 inch. Treated bars 1¼ inches in diameter showed an average transverse strength of 4,900 pounds per square inch and a deflection of 0.165 inch.

# Calendar of Coming Conventions

**April 30-May 2—Flat Rolled Steel Manufacturers,** White Sulphur Springs, W. Va. A. N. Flora, 505 Terminal Tower building, Cleveland, will furnish details.

**May 4-7—American Foundrymen's association.** Thirty-fifth annual convention, and exhibition, at Stevens hotel, Chicago. C. E. Hoyt, 222 West Adams street, Chicago, is secretary.

**May 4-9—Exposition of Chemical Industries.** Thirteenth exposition of machinery, metals and alloys, chemical products, etc., at Grand Central Palace, New York.

**May 6-8—American Society of Refrigerating Engineers.** Spring meeting at Hotel President, Kansas City, Mo. David L. Fiske, 37 West Thirty-ninth street, New York, is secretary.

**May 7-9—American Gear Manufacturers association.** Annual spring meeting to be held at Hotel Statler, Buffalo. T. W. Owen, 3608 Euclid avenue, Cleveland, is secretary.

**May 12-13—American Institute of Mining and Metallurgical Engineers.** Annual spring meeting of open-hearth committee, at Stevens hotel, Chicago. L. F. Reinartz, American Rolling Mill Co., Middletown, O., is chairman.

**May 12-14—American Society of Mechanical Engineers.** National Aeronautic meeting, Baltimore. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

**May 15—American Society for Steel Treating.** Eastern group chapter meeting, at Penn Athletic club, Philadelphia. New York, New Jersey, Lehigh Valley and Philadelphia chapters will participate. A. O. Schaefer is secretary-treasurer of the Philadelphia chapter.

**May 18-20—American Steel and Heavy Hardware association.** Twenty-second annual convention at William Penn hotel, Pittsburgh. B. R. Sackett, 505 Arch street, Philadelphia, is secretary-treasurer.

**May 20-21—National Association of Sheet Metal Distributors.** Annual meeting at William Penn hotel, Pittsburgh, following the meeting of the American Steel and Heavy Hardware association. B. R. Sackett, 505 Arch street, Philadelphia, is secretary-treasurer of both organizations.

**May 22—Rail Steel Bar association.** Semiannual meeting and at Vanderbilt and Commodore hotels, New York. H. P. Bigler, 228 North LaSalle street, Chicago, is secretary.

**May 22—American Iron and Steel institute.** Annual spring meeting at Commodore hotel, New York. E. A. S. Clark, 75 West street, New York, is secretary.

**May 25-26 — American Refractories institute.** Annual spring meeting at Greenbrier hotel, White Sulphur Springs, W. Va. Dorothy A. Texter, Oliver building, Pittsburgh, is secretary.

**May 27-29—National Foreign Trade council.** Eighteenth National Foreign Trade convention at Commodore hotel, New York. O. K. Davis, India House, 1 Hanover square, New York, is secretary.

# New Books Worth Reading

SCIENCE ◆ ECONOMICS ◆ BUSINESS

## Where To Find Modern History of Research

*Five Years Research in Industry*, by Clarence J. West; paper, 91 pages 6 x 9 inches; published by National Research council; supplied by STEEL, Cleveland, for 50 cents plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House London, for 2s, postage extra.

Following publication in 1925 of a bibliography of research for 1923-25 by the division of engineering and industrial research of the National Research council so much interest was manifested that a supplement for the years 1926-30 has been compiled to bring it to date. The material has been selected with a view to papers dealing directly with the value of industrial and scientific research, those dealing with a given industry or a particular industrial process and those discussing the future and the problems facing industry.

Subjects relating to the steel and iron industry are: Abrasives, automotive engineering, industrial chemistry, construction, corrosion, electrochemistry, electrometallurgy, engineering, foundries, gas and oil engines, iron and steel, lubrication, machine tools, metallurgy, nonferrous metals, power, refractories and welding

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## Standards Are Listed by Government Bureau

*Standards Yearbook*, 1931, 399 pages, cloth, 6 x 9 inches; published by bureau of standards, Washington; supplied by STEEL, Cleveland, for $1 plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 5s, postage extra.

A picture is presented in this yearbook of the standardization movement in various fields of industry, as conducted by national and international agencies. This volume contains not only the outlines of standardization activities and accomplishments of the national bureau of standards and other governmental agencies, but also of technical and trade associations.

A feature is a series of articles by experts in the transportation field, giving a panoramic view of the value of research as an aid to standardization and brief summaries of accomplishments in the several fields.

A bibliography is included containing a list of recent publications relating to standardization, compiled by the library of congress.

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## Canadian Index Shows Scope of Its Industry

*Canadian Trade Index*, 1931, cloth, 884 pages, 6½ x 10 inches; published by Canadian Manufacturers' association, Toronto, Ont.; supplied by STEEL, Cleveland, for $6, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 30s, postage extra.

Each year this index adds features to increase its value. This is the eleventh issue and in it the seeker for knowledge of Canadian trade is able to find anything he needs.

A new feature is an export section provided by the department of trade and commerce of the dominion government. This presents a statement of Canadian progress in commerce, with data designed to aid in the further development of export trade.

The main effort of the work is to present a reliable and complete list of articles manufactured in Canada and a list of the manufacturers making them. To this end the names of members of the association and of manufacturers not members are given equal treatment.

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## Nonmetallic Inclusions in Steel Discussed

*Nonmetallic Inclusions in Iron and Steel*, by Dr. Carl Benedicks and Helge Lofquist; cloth, 311 pages, 6 x 9 inches; published by John Wiley & Sons Inc., New York, and supplied by STEEL, Cleveland, for $8, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 40s, postage extra.

Following presentation of a scholarship by Sir Robert Hadfield to the Metallographic Institute of Stockholm it was decided to make this the subject of the scholarship awarded in 1926. A compilation and critical examination of existing literature was first undertaken and, since the scholarship did not cover sufficient time for so arduous an undertaking, the Swedish Ironmasters association supplemented this by further financial aid.

The first part is largely introductory and explanatory of the plan followed in the treatment of material. The second gives general description of slags, their equilibrium diagrams and mode of occurrence and the third part treats of methods of qualitative and quantitative analysis of slag particles. The authors then take up factors influencing the formation and dispersion of slag grains in a metal and the influence exerted by slag grains on the properties of the material. Comparison also is made of slag contents of various kinds of steel.

A table of general references is given and a table of references belonging to the compilation of the properties of slag substances. An important feature is a table giving a compilation of the most important properties of the most frequently occurring slag substances.

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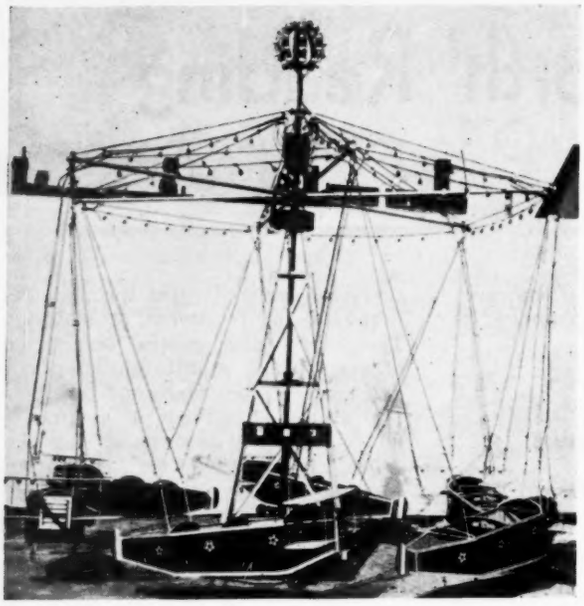
## World Steel and Iron Statistics Are Compiled

*Statistics of the Iron and Steel Industries* (1930); compiled by the National Federation of Iron and Steel Manufacturers of Great Britain, Caxton House, London; 1X + 182 pages, 6¾ x 9⅝ inches; supplied by STEEL, Cleveland, for $1.20, plus 15 cents postage.

This annual publication of world statistics follows in the main the style of previous issues, bringing most figures to the close of 1929. Several additions have been made to complete the picture of world conditions and production. These additions include statistics of Norway, production of iron ore, pig iron, ferroalloys and steel, imports of iron and steel and exports of iron ore; Hungary, imports and exports of iron and steel; Greece and Turkey, imports of iron and steel. In the section devoted to Belgium additional figures are given relating to imports and exports of iron ore.

The section on the tariff has been revised and gives latest information, including import duties on iron and steel products entering Egypt. In figures for the United Kingdom a new table has been included showing the numbers insured in the industry and the percentage unemployed at various periods.

Statistics for the United Kingdom are based on returns from manufacturers and co-operation is such that these are practically complete.



190th Article

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Amusement Park Devices

# Large Uses of Steel in Small Ways

APPROXIMATELY 12,000 tons of steel is consumed annually in the manufacture of amusement park and carnival devices in the United States, which leads the world in the production of such equipment. Manufacturers subdivide this total as follows: Shooting galleries, 2200 tons; scooters, 2200 tons; roller coasters, 2000 tons; tumble bugs, 1400 tons; airplane swings, 550 tons; merry-go-rounds and ferris wheels, 500 tons each; whips, frolics and tilta whirls, 500 tons; miniature railroads, 230 tons; all others, 2000 tons.

The best known and most spectacular of all amusement park devices are the roller coasters, formerly built of wood. Due to many fires and accidents many cities now require that they be made of steel. A modern coaster, costing $100,000 to $140,000, contains about 300 tons of structural steel. The number built averages ten a year.

### Steel in Carrousels

To the great mass of people who attend amusement parks the old-fashioned mery-go-round is the typical device. Steel now is the principal material used in this construction. Even the animals are being made of metal, cast aluminum or composition. About 25 tons of steel is represented in every merry-go-round now manufactured.

Only steel could make the airplane swing safe and practical. This device has a central steel mast, with six steel arms extending outward from the top, to which are fixed the cables carrying the passenger cars. The framework of the cars is made of small steel angles and pipe.

The tumble bug is an elaborate device consisting of a circular track on which motor driven cars shaped like bugs travel at high speed. The complete outfit weighs 80 tons of which 70 tons is steel, and the annual production numbers about 20.

### Shooting Into Steel

Nearly every amusement park has its shooting gallery and in most cities building specifications require steel side walls, overhead and backing. An average size gallery built in accordance with these specifications contains 50 tons of plates and sheets. The estimated 2200 tons of steel built into shooting galleries in a year's time includes a number of recent orders for galleries placed for armored car service companies where their employes may be trained to shoot straight.

Miniature railroads are gaining in popularity. The locomotives weigh from one-half ton up to five tons, and are built almost entirely of steel. The cars also are made of steel and average a half ton each. The tracks range from 400 feet up to three miles in length. American manufacturers assemble about ten of these outfits each year, estimating the average weight as 230 tons.

The scooter or "dodge 'em" device consists of a steel floor and a steel ceiling between which a group of small self-propelled electrically driven cars operate. Each car has a trolley which presses against the ceiling, which forms one electrical contact, the other being the floor.

An average size outfit uses a floor 40 x 80 feet and operates 25 small cars, each weighing 400 pounds and accommodating one passenger. The car is surrounded by a cushioning spring, consisting of a steel band supported by coiled springs. Steel plates in floor and ceiling range from 3/16-inch to ½-inch in thickness. The steel required for a complete outfit weighs 110 tons.

Portable ferris wheels for conveyance to small towns weigh 12 tons; the stationary types, up to 200 tons, while the large wheel at Coney Island, New York, required 400 tons of structural steel. The stationary types are not as popular as formerly, as the income is out of proportion to the heavy initial expense, and the public "goes" for the newer devices.

Some of these are the whip, the tilta whirl, and the frolic—all designed to give the customers a good shaking up, or a thrilling glide, and all built largely of steel, for safety and durability.

American folly? During the three years ended Dec. 31, 1930, American manufacturers exported to Europe alone more than $1,000,000 worth of amusement devices, and now are figuring on many large outfits for Siam and South Africa. The annual income from the amusement park and carnival industry in the United States even during dull times exceeds $250,000,000.

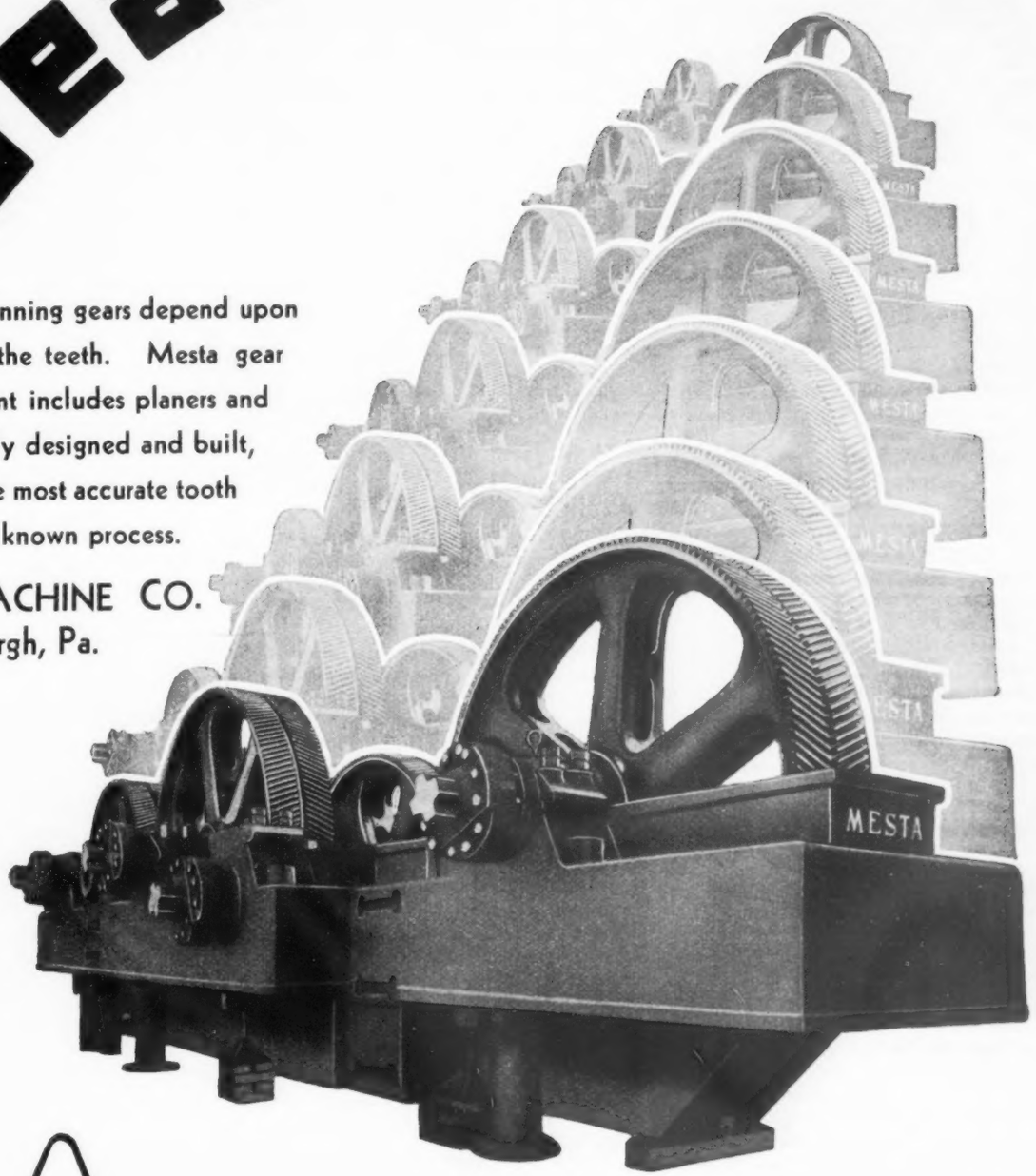
## Bridge Design Analyzed

American Institute of Steel Construction Inc. has published a 48-page booklet which discusses economy in highway bridge design. The author is T. W. Dodd, president, St. Joseph Structural Steel Co., St. Joseph, Mo. A discussion is appended by J. E. Greiner, consulting engineer. The booklet is a comprehensive treatment of the subject of small highway bridges and includes drawings and a mass of structural detail. The author points to the need for a more thorough analysis of bridge design and a better knowledge of materials of construction.

## Gray Iron Groups Convene

Several committees of the Gray Iron institute, as well as the board of directors of that organization, are meeting at the Stevens hotel, Chicago, during the convention of the American Foundrymen's association, May 4-7. Cost, membership and technical committees will meet Wednesday, May 6; finance and budget committee, and board of directors will meet Thursday, May 7. The annual Gray Iron institute luncheon will be held Wednesday noon, May 6.

# Gear Drives




Silent, smooth running gears depend upon the accuracy of the teeth. Mesta gear cutting equipment includes planers and hobbers, specially designed and built, for producing the most accurate tooth possible by any known process.

MESTA MACHINE CO.
Pittsburgh, Pa.

# Mesta

# Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

## Tensile Properties

*The "short-time" method of determining the tensile properties of alloy steels at elevated temperatures, by William H. Kahlbaum, R. L. Dowdell and W. A. Tucker, research paper 270 of the bureau of standards, 26 pp., 18 illusts., 3 tables.*

By means of "short-time" tension tests a series of alloy steels was tested at different elevated temperatures. The proportional limit was determined in each case. The materials tested were a plain carbon steel and commercial alloys of chromium, vanadium and iron, with and without additions of tungsten, silicon, or aluminum; also chromium-tungsten, nickel-molybdenum and several austenitic steels with and without tungsten.

Metallographic study revealed little intercrystalline weakness and no marked or significant change in structure resulting from the high-temperature tests. The addition of tungsten increases the "structural stability" of the austenitic alloys. Hardness was determined as a further indication of tempering which might have occurred during the heating. A comparison of "short-time" test and "flow test" for pearlitic and austenitic steel is included.

—STEEL, 4-30-31

## Deoxidation of Steel

*Results of an investigation of the deoxidation of steel with silicon, by C. H. Herty Jr., G. R. Fitterer and C. F. Christopher, technical paper 492 of the bureau of mines, department of commerce, 42 pp., 17 illusts., 3 tables.*

The work was a co-operative investigation by the bureau of mines, department of commerce, Carnegie Institute of Technology and the Metallurgical Advisory board. Forty-six manufacturers contributed to the financing of the study. The discussion is divided into two parts, the first dealing with preliminary laboratory studies and the second dealing with the basic open-hearth process.

The liquidus portion of the system $SiO_2$ was studied over the range of 45 per cent FeO to 100 per cent FeO. Synthetic ferrous silicates were prepared and their melting points determined. Microstructures of the ferrous silicates were compared with structures of nonmetallic inclusions resulting from the deoxidation of steel with silicon, and from this comparison identification of the latter was made possible.

Fluxing of $SiO_2$ by dissolved FeO was shown to be an important factor in the deoxidation of low-carbon steel. Steels high in $SiO_2$ are red short in forging, whereas steels containing ferrous silicates high in FeO forge without cracking. The use of silicon as a deoxidizer in steelmaking processes always results in the formation of silica or silicates, depending on the amount of silicon used and the concurrent use of other deoxidizers. The oxidation of the metal in the basic open-hearth process increases as the carbon content decreases.

—STEEL, 4-30-31

## Arc Welded Joints

*Effect of welding procedure on shrinkage strains in buttwelded joints, discussed by C. H. Jennings, in Journal of the American Welding society, April 1931, p. 27, 3½ pp., 5 illusts.*

Results of investigation show that there is little difference between the shrinkage strains as obtained by the cross-weave procedure and the horizontal-layer procedure. Smaller shrinkage strains were obtained by the vertical-layer procedure than by the cross-weave, horizontal-layer and vertical-weave procedures. The latter procedure developed the greatest shrinkage strains. The peened vertical-layer method produced the smallest shrinkage strains. Peening is effective as a means of reducing shrinkage strains in buttwelds and in producing a uniform stress distribution. The exact stress distribution depends upon the rigidity of the joint and the method of welding.

—STEEL, 4-30-31

## Why Metals Fail

*New concepts of how metals behave under stress, by H. F. Moore, in Product Engineering, April 1931, p. 164, 3 pp., 2 illusts.*

Any problem of machine design involving the strength of parts must answer at least two questions: (1) What are the loads which come on the part and what stresses do they set up in the part; and (2) what stresses will a material stand without failure? The first of these questions is answered by computation based on known service conditions, using the formulas of mechanics and materials. The second question can be answered only by actual tests of the material, either long-time service tests or laboratory tests.

Recent studies of the failure of metals under repeated stress, commonly called fatigue, indicate that the theory of elasticity, developed originally in about 1824, predicts probable damage to materials under loads somewhat smaller than those actually found necessary to do appreciable damage.

The metallurgical microscope and the X-ray spectroscope have modified profoundly theories as to how solid materials behave under stress. Formulas for the strength of materials can no longer be looked upon as rigidly accurate, but they are statistically true and are safe. Whether the theoretical cohesive strength of metals ever can be reached seems rather doubtful.

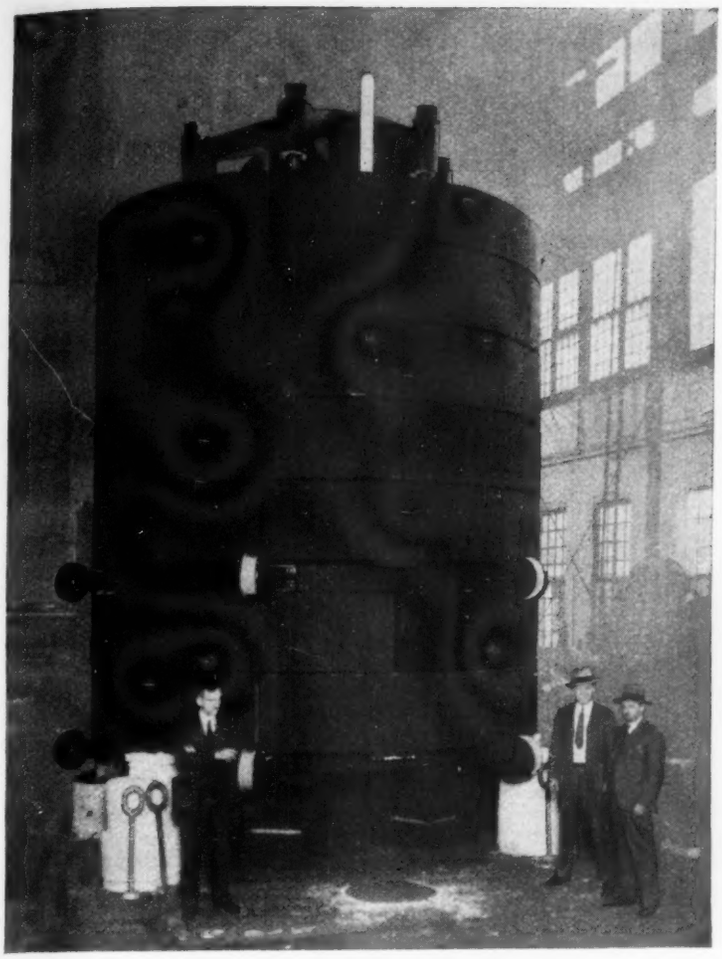
—STEEL, 4-30-31

## Bearing Lubrication

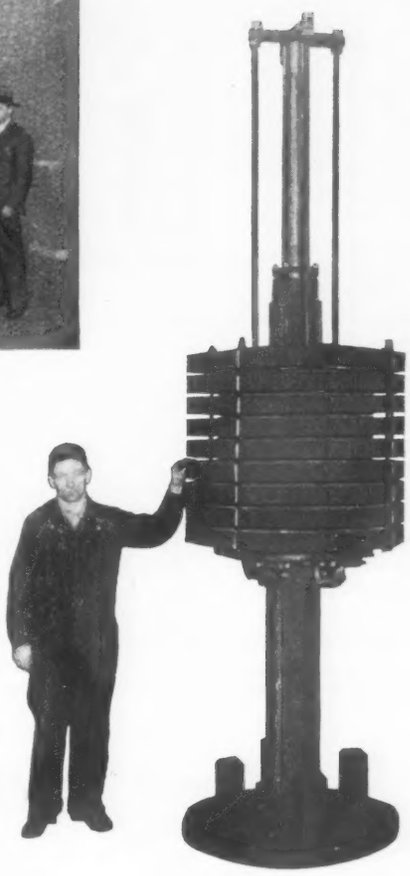
*Relation of proper lubrication to the life of bearings, discussed by H. S. Trecartin, in Black and White, May 1931, p. 13, 4 pp., 3 illusts.*

For low speeds and heavy loads, greases of various consistencies may be used to advantage. Graphite greases should not be used for antifriction bearings, whether ball or roller. The graphite flakes build up and clog between the roller and the races, and may result in entirely stopping the roller action. For high-speed bearings oil must be used. It is good practice to have a felt strainer, and to let the oil run out after being used so that it may carry off any chips or particles from the bearing. The oil should be selected for proper weight or thickness, lubricity, purity and freedom from sulphur or acids. Every care should be taken to have it clean and to see that it carries no dirt to the bearing. It is well where oil or grease is used to drain and wash out the old lubricant periodically, and to replace it with clean fresh material.

—STEEL, 4-30-31



# *GIANTS for Industry pygmies for the 'Lab'*



FOR the hydraulic press whose perfect functioning necessitates the action of an accumulator, it is well to bear in mind the manufacturer of such equipment specializing in the completeness of his line.

Under the listing of *HYDRAULICS* — Birdsboro designs and builds Shingle, Linoleum, Board, Lead Covering, Bushing, Moulding, Embossing, Extrusion, Flanging, Wheel, Testing and various other presses. As to accessories: Accumulators, Intensifiers, Pumps, Valves and Piping layouts. For the purchaser's interest, we might add that all steel castings employed in the building of these items are cast in our own foundry division at Birdsboro.

*(Note: The "giant" accumulator shown above and constructed for the operation of an extrusion press weighs, complete, over 1,115,000 pounds. The pick-up weights being so arranged to furnish two various pressures. The "pygmy", silhouetted, was built for laboratory testing and is self contained.)*

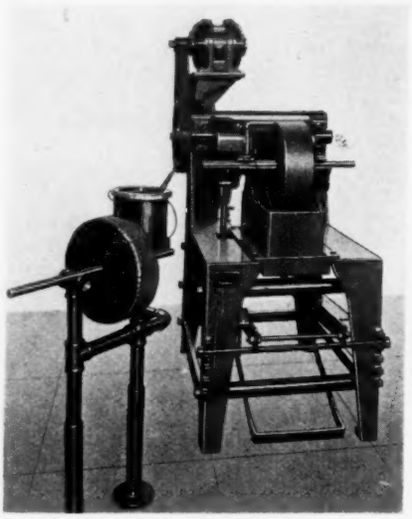
**BIRDSBORO**
STEEL FOUNDRY AND MACHINE COMPANY
DESIGNERS AND BUILDERS
BIRDSBORO, PENNSYLVANIA

# Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

## Machine Is Developed To Charge Polishing Wheels

General Spring Bumper Corp., division of Houdaille-Hershey Corp., Detroit, has developed a machine for pounding emery into polishing wheels, this process being known as "setting up." The builder claims that this machine, shown in the accompanying illustration, distributes emery evenly, and pounds it in to maximum depth, thereby insuring wheels of dependable quality. Such machine prepared wheels are said to show more than 20 per cent increased productivity over ordinary hand prepared wheels, with 66 per cent saving in direct labor cost of preparation.



*Polishing wheel "set-up" machine designed by General Spring Bumper Co.*

### Driving Mechanism

Power from a ¾-horsepower motor is transmitted through a gear and crank shaft to a pair of rocker arms supported by vertical connecting rods. These rocker arms are provided with spring clutches which receive the arbor on which the wheel to be coated is mounted. Directly below this mounting, on a steam heated cross member, is a pan containing abrasive powder. This heating arrangement gives correct emery temperature for perfect wheel covering.

Upon starting the machine, the crankshaft forces the rocker arms in a horizontal direction, but the vertical connecting rods, held laterally by adjusting arms at the lower ends, convert this horizontal motion into an elliptical orbit, thus giving the combined rolling and pounding action necessary. The intensity of the pounding action is governed by adjustable collars on the connecting rods, and an additional adjustment is available by a foot pedal operating the adjusting arms. This pedal serves a dual purpose, as by it the operator can lift the rocker arms for easy removal of the wheels or, by using the pedal and relocating a shaft running across the front of the machine, he can adapt the setting to wheels from 5 to 20 inches in diameter and up to 7 inches in width. Plates attached to rocker arms adapt the spring clutches to larger or smaller arbors.

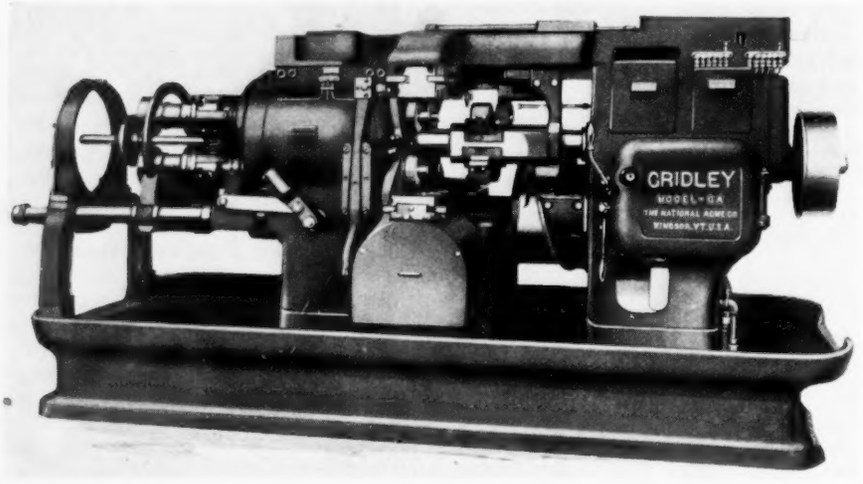
At a normal crank speed of 120 revolutions per minute, a skilled operator can finish three wheels per minute. The machine occupies 30 x 40 inches of floor space, has a height of 60 inches exclusive of motor, and weighs approximately 1150 pounds.

◆

## Improvements Are Made in Four-Spindle Automatics

National Acme Co., 170 East 131st street, Cleveland, announces important improvements in its line of heavy duty four-spindle automatic screw machines. The operating side of one of these machines is shown in the accompanying illustration.

It is pointed out that rigidity, which is of utmost importance with the new cutting materials, is inherent in the design. Massive front and rear columns, forming respectively the headstock and the driving end of the machine, are solidly supported on the combination base and pan, while at the top, these columns are tied together by a heavy plate.

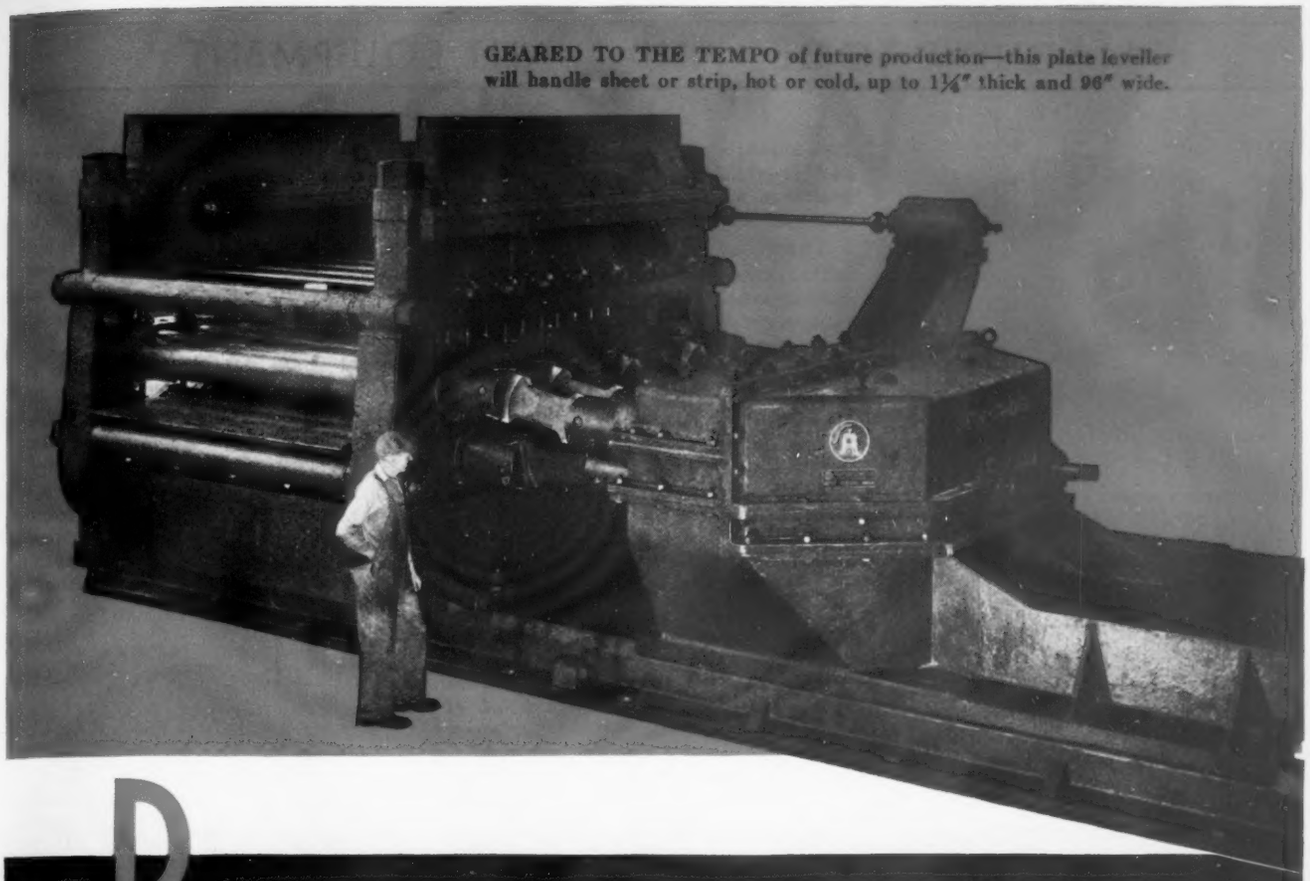



*Heavy duty, four spindle automatic screw machine with four independent cross slides, developed by machine tool division of National Acme Co.*

### Unified Head and Turret

The familiar spindle carrier having an integral stem carrying a longitudinal turret, long a distinctive feature of this company's machines, is retained. This has been lengthened between its disks and generally is of heavier construction. Its stem is of hardened and ground steel, and the turret, which also has been lengthened, is bronze bushed and provided with a felt chip wiper. The mass of metal surrounding the head of the carrier has been increased, so that high spindle speeds and heavy feeds do not generate vibration. Rapid indexing is performed by a simple and powerful Geneva mechanism which gives uniformly accelerated and retarded motion, thereby insuring smooth action, with minimum shock to the locking mechanism.

Four independently operated cross



GEARED TO THE TEMPO of future production—this plate leveller will handle sheet or strip, hot or cold, up to 1¼" thick and 96" wide.

# PLATE LEVELLERS

## as modern as tomorrow's production methods

IT'S tomorrow you're building for—tomorrow with the newer methods of the future . . . with costs cut to the bone to compete.

That's why this plate leveller, like all Aetna-Standard machinery, is built to the design of the future as far as highly capable engineers can predict.

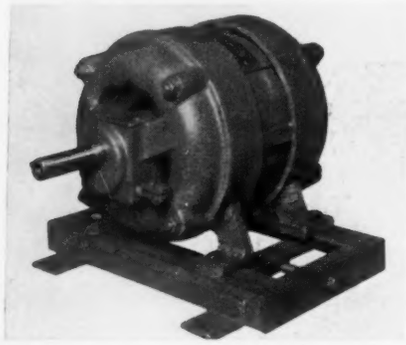
That's why the engineers who design Aetna-Standard equipment are conservative only so far as soundness demands—are as progressive as the best engineers in the world can be.

And that's why Aetna-Standard production facilities are second to none.

Whenever you need equipment geared to production methods of the future, first call Aetna-Standard.

**The AETNA-STANDARD ENGINEERING CO. YOUNGSTOWN, OHIO.**

*DESIGNERS AND BUILDERS OF ROLLING MILL MACHINERY*



*Welded steel motor base announced by Lincoln Electric Co.*

slides add greatly to the efficiency and scope of forming, cutting off, etc. The two lower slides, from which heavy operations are performed, are mounted on rigid supports cast integral with the head column, and are operated directly by cams on drums housed within these supports.

**Inverted Top Slides**

Duplicate finishing slides, in an inverted position on the top plate, are actuated by separate sets of cams on the cross slide drums, through simple lever and link mechanisms. All slides are of generous area and gibbed to hardened bearing plates.

The mechanism has been rearranged to allow chips to fall freely into the pan and to give easy access to the tools. The straight line rims of the pan have been utilized as rails to carry roller mounted chip and splash guards.

Other improvements include: Full antifriction bearing spindles on all but the larger sizes; helical spindle gears; hardened steel feed and speed gears with burnished teeth, running in a spray of oil; convenient distribution of coolant from reservoirs in the top plate; high pressure coolant for drills, reamers, etc., and medium pressure coolant for turning, forming, etc.; receding stock stop of plunger type; direct connected stock reel mounted on the end of the pan; and provisions for threading in two positions and for revolving tools in all four positions.

These improved automatics are built in several sizes, the smallest having maximum bar capacity of 1⅜ inches, while the largest has maximum bar capacity of 3½ inches.

◆

## One-Piece Base for Motors Is of Welded Steel

Lincoln Electric Co., 12818 Coit road, Cleveland, has developed a one-piece welded steel base for use on electric motors. One of these bases, with motor in place, is shown in the accompanying illustration. These bases are designed to be used instead of side rails, and are constructed of rolled steel angles and flat bar stock assembled by electric arc welding.

Flanges of the angles to which the motor is bolted are slotted to permit moving the motor on the base when tightening the belt. At one end, a screw adjustment is provided for moving the motor on its base during such adjustments. Drilled angles which are welded to the sides of the frame form hold-down lugs for securing the base in position on its foundation.

◆

## Circular Calculator Gives Production Figures

C. P. Kramer, 4554 West Congress street, Chicago, announces a production calculator, shown in the accompanying illustration, for figuring drilling, turning, forming and cutting off operations carried out on turret lathes and single or multiple spindle automatic screw machines and chucking machines.

It is a pocket size circular slide rule made of stiff sheet brass, with etched figures and divisions, designed to withstand shop use. One half the circumference of the large dial, which is 4 inches in diameter, carries a scale of spindle speeds, ranging from 35 to 3500 revolutions per minute. The other half carries a scale of elapsed time, ranging from 2 seconds to 3.5 minutes.

The small dial, rotating on the larger one, carries on the upper half of its circumference a scale of feeds in thousands of an inch per revolution, and on its lower half a scale of lengths or depths of cuts, in inches. If a selected feed be set to desired spindle speed, cutting time appears opposite the division corresponding to length or depth of cut. Production per hour of

*Kramer estimator for figuring output of turret lathes and screw machines*

parts requiring from 1 second to 3.5 minutes each, can be read from scales on the face of the large dial, through oblong windows in the small one.

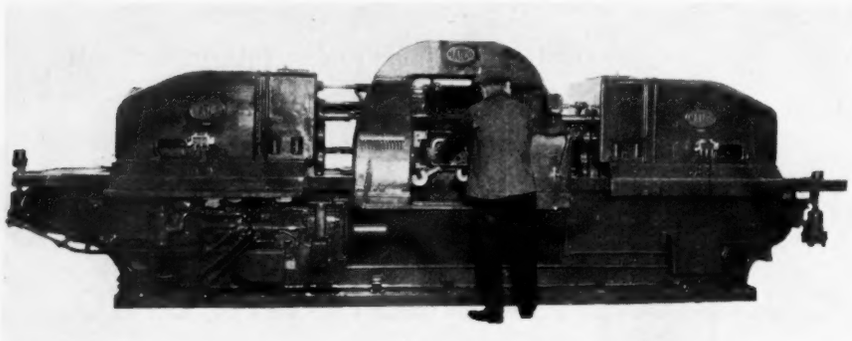
Conversely, feed per revolution can be determined readily for given length or depth of cut and given in spindle speed. The effect upon elapsed time of an increase of say 0.005-inch in feed per revolution also can be determined.

◆

## Two-Way Horizontal Driller Has Hydraulic Feed

National Automatic Tool Co., Richmond, Ind., has developed a large two-way horizontal driller with hydraulic control. This machine, shown in the accompanying illustration, was developed primarily for drilling the camshaft hole in cast iron cylinder blocks for automobile engines.

Two horizontal heads are mounted to slide longitudinally on a heavy single-piece bed. Hydraulic pressure for moving the heads and for indexing the work fixture between them is

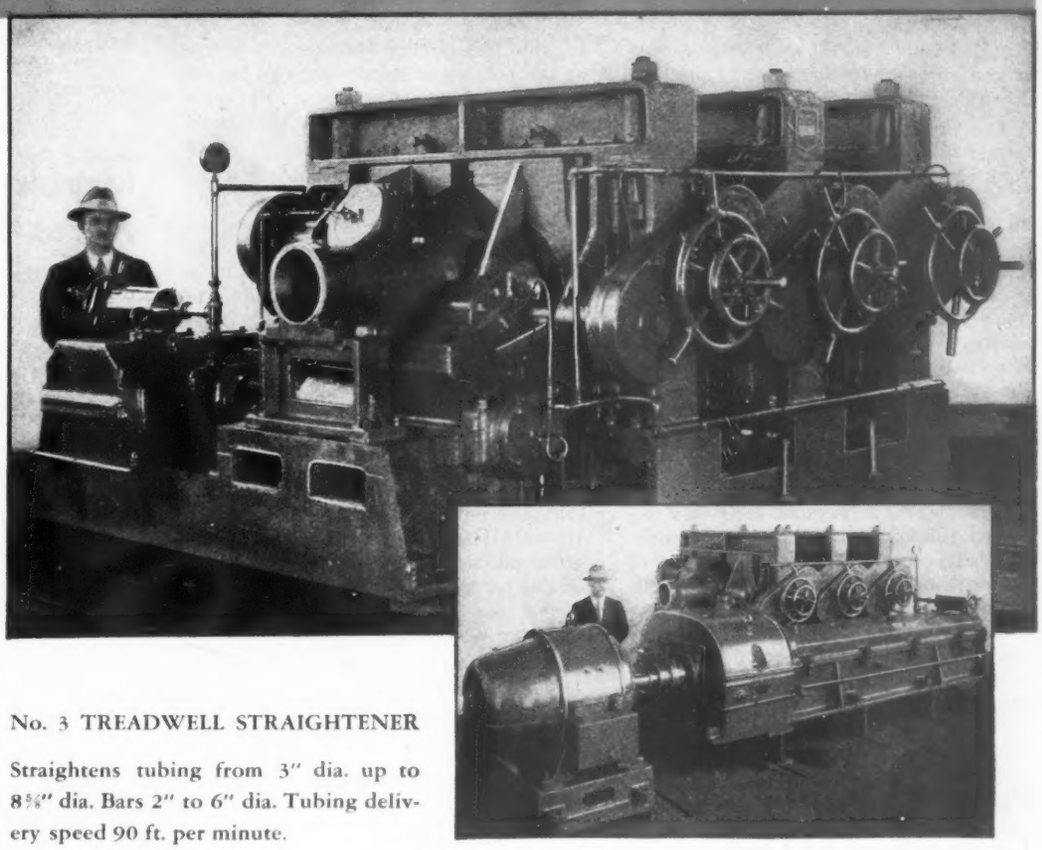


*Dual head horizontal driller with automatic hydraulic control and indexing fixture, designed by National Automatic Tool Co. for use on cylinder blocks*

# AGAIN

## *they buy a Treadwell Straightener*

(ABRAMSEN DESIGN)



No. 3 TREADWELL STRAIGHTENER

Straightens tubing from 3" dia. up to 8⅝" dia. Bars 2" to 6" dia. Tubing delivery speed 90 ft. per minute.

A TREADWELL STRAIGHTENER was installed in this large tube mill over one year ago. The No. 3 Treadwell Straightener illustrated was recently installed in this same mill—its selection being based on the proven ability of the Treadwell machine to increase straightening efficiency and lower maintenance costs.

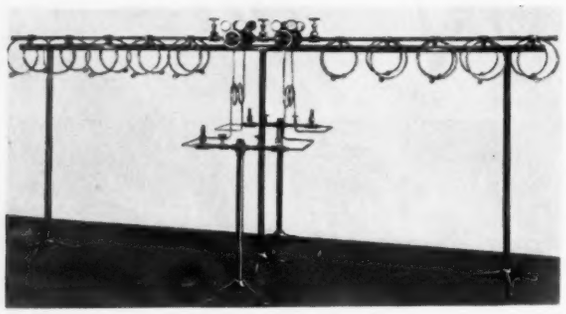
The improved Treadwell straightening principle is perhaps best suited for your own straightening requirements. This can be quickly determined by a working demonstration. We will gladly arrange one by sending a small working model to your plant.

BETTER GRADE MACHINERY

**Treadwell Engineering Company**

Easton, Pa.

*Rolling Mills—Threading & Cutting-Off Machinery—Special Machinery—Iron & Steel Castings*



*Efficiency of welding departments using gas method is increased by use of this multiple tank manifold built by Alexander Milburn Co.*

supplied by a special hydraulic pump driven by a 10-horsepower motor through a silent chain.

The two heads, which move toward each other and toward the central work holding fixture, have thrust of approximately 20,000 pounds each. They are equipped with fixed center gear driven cluster boxes containing four heavy-duty spindles with nose adjustment. These spindles are 3¼ inches in diameter and roller bearing mounted. Each cluster is driven by an independent 15-horsepower constant speed motor. Travel of the right hand head is 20 inches, while that of the left hand head is 25 inches. The work holding fixture is of the fixed position trunnion type. It is roller bearing mounted and indexes, clamps and releases automatically, indexing being controlled by movement of the left hand head.

The machine performs eight distinct operations on each cylinder block and gives production speed of 75 blocks per hour. Net weight is approximately 47,000 pounds.

◆

## Powerful Press Features Compactness of Design

Toledo Machine & Tool Co., Toledo, O., has developed an improved type of heavy-duty press for so-called bottoming operations such as restriking brake drums, and for sizing fish-plates, emergency brake levers, connections and similar parts, on which work the press operation eliminates straddle milling. The machine also can be used for embossing articles of large size and for hot and cold forging operations. A front view of the new press is shown at the right.

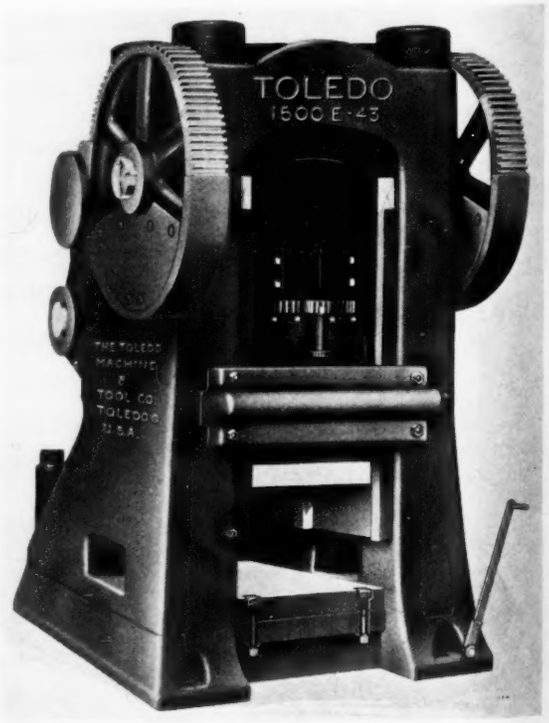
Although unusually strong, the press is compact, due in a large measure to its four-piece steel tie-rod construction. The tie rods at the back of the frame play an active part in taking up the reaction of the blow and a heavy knockout bar near the center of the frame adds to its rigidity. The crankshaft is of the full eccentric type and is made of heat treated alloy steel. It has a 12-inch stroke and easily is capable of exerting 1500 tons pressure at the bottom of its stroke. To insure balance, twin gears cut from solid steel castings are used to drive the shaft. A heavy free running connection screw gives 3 inches of adjustment.

The slide is provided with extra long ways and a heavy tie plate across the top. This slide measures 36 inches front to back and 30 inches right to left. The distance from the top of the bed to the slide, with stroke down and adjustment up, is 24 inches. The long square gibs are generously proportioned and are easily adjustable.

**Bearings and Lubrication**

The driveshaft is roller-bearing mounted, all other bearings in the machine being of bronze. A pump delivers oil to the bearings and provisions are made to shed excess oil back to the reservoir. Gears run in oil.

The bed measures 16 inches front to back, 43 inches right to left; distance from floor to top of bed is 18 inches, and the overall height of the machine above the floor is 14½ feet, which is low for a machine of its capacity. Drive is by a 50-horsepower motor running at 1200 revolutions per minute. Control is by a multiple-disk friction clutch integral with the flywheel, which is mounted on roller bearings and has an independent brake which allows the operator to stop or start the press at any point of the stroke. The press operates at 30 strokes per minute. Its design is such that feeds of all types can be attached, so that the available number of strokes that can be utilized is considerable. Net weight of the machine is approximately 250,000 pounds.




*This massive press, developed by Toledo Machine & Tool Co., is recommended for heavy bottoming operations, for sizing forgings, and for embossing large work, as well as for hot and cold forging. Although combining unusual capacity, power and speed, the design is such that the machine is compact and therefore of reasonable size*

◆

## Multiple-Tank Manifold Is Aid to Welding

Alexander Milburn Co., 1416 West Baltimore street, Baltimore, has developed a 20-tank manifold for use in connection with gas cutting and welding apparatus. The accompanying illustration shows this device as it appears prior to installation of gas tanks.

The manifold is constructed of high grade bronze tubing, equipped with standard gas regulators and copper coils manufactured by this company. The assembly is mounted on sturdy pipe legs having tripod bases. A feature is that each tank or each side of the manifold, may be operated independently through separate shutoff valves, thus allowing torches

to continue in operation while the tanks are being connected or disconnected.

The manifold is recommended by its manufacturer to eliminate the necessity of transporting cylinders about the plant, the central source of supply maintaining economical and uniform pressure for all welding and cutting operations.

◆

## Dust Exhauster Unit Has Vertical Motor Drive

Hisey-Wolf Machine Co., Cincinnati, has designed motor-driven exhauster equipment for drawing dust away from its standard buffing and polishing machines. The accompanying illustration shows this apparatus mounted on one of the double-end buffing machines manufactured by this company.

The power unit consists of a vertical motor and direct-driven centrifugal blower mounted on a unit base which is in turn bolted to the back of the floor stand of the machine. Suction pipes lead from the intake of the blower to hoods over the wheels. These hoods may be supported either directly on the frame of the machine, or in some cases upon separate standards reaching to the floor. This equipment is furnished in various designs and capacities to suit a wide range of machines.

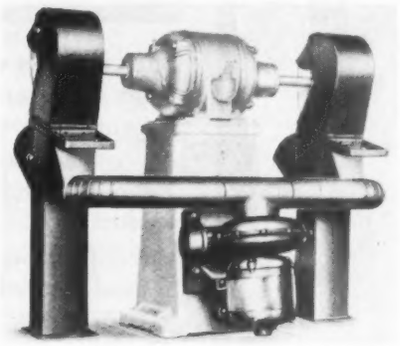
◆

## Full Range Arc Welder Has Simple Adjustment

USL Battery Corp., Niagara Falls, N. Y., announces a full range type of electric arc welding outfit requiring no voltage adjustments of any kind, no switches or rheostats for current adjustment. Other accessories are eliminated which might confuse the operator and cause him to think in terms of volts and amperes instead of welding results. One of these outfits, mounted on a portable truck, is shown in the accompanying illustration.

A feature of the set is the simple electrode indicator which is set by the operator according to the size of electrodes being used. This gives accurate welding current adjustments over a wide range. A high striking voltage, 60 volts, is constant for all sizes of electrodes, either bare or coated.

The maker points out that the generator was designed especially to produce an arc which will not burn light work and which at the same time assures deep penetration on heavy work.



*Unit exhauster for buffers and polishers built by Hisey-Wolf Machine Co.*

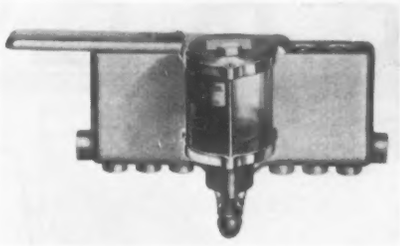
It is pointed out that the full range principle of adjustment not only results in easier operation but also eliminates "freezing" of the electrode.

◆

## Multiple Wick-Feed Oilers Allow Close Adjustment

Daun-Walter Co., 508 North Water street, Milwaukee, has developed a line of adjustable wick-feed units for oil lubrication of machine bearings. These units, one of which is shown in the accompanying illustration, are made in various sizes, with oil reservoirs holding from ½ pint to 2 gallons.

The unit has two main elements, a constant level oil control, and an adjustable wick oil feed unit of the multiple type, this last being known as a "wick box." This wick box is of cast aluminum with removable cover and is made with 4, 8 and 12 outlets, providing lubrication to a respective number of bearings. Horizontal outlets on either end of the box allow hooking up of other wick units when located on the same level.



*Daun-Walter multiple lead oiler which uses wick feed principle*

The level of oil in the wick chamber is maintained permanently, quantity of oil fed by the wick being determined by the "turn down" of each wick loop, which is readily adjustable. Capillary attraction draws the oil up over the loop against the action of gravity, so that the higher the loop the less oil is fed and the lower the loop the more oil is fed to the bearing.

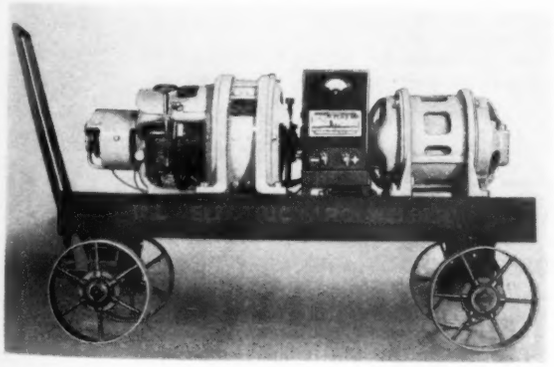
A minimum as low as four drops per hour can be maintained continuously, and this manner of using a wick is said to prevent the possibility of clogging, or carrying solid foreign matter to the bearings. The maker points out that this system has no moving parts to wear out or get out of order, and that a glance is sufficient to check the oil supply for a large group of bearings.

◆

## Abrasive Wheel Developed for Cutting-off Machine

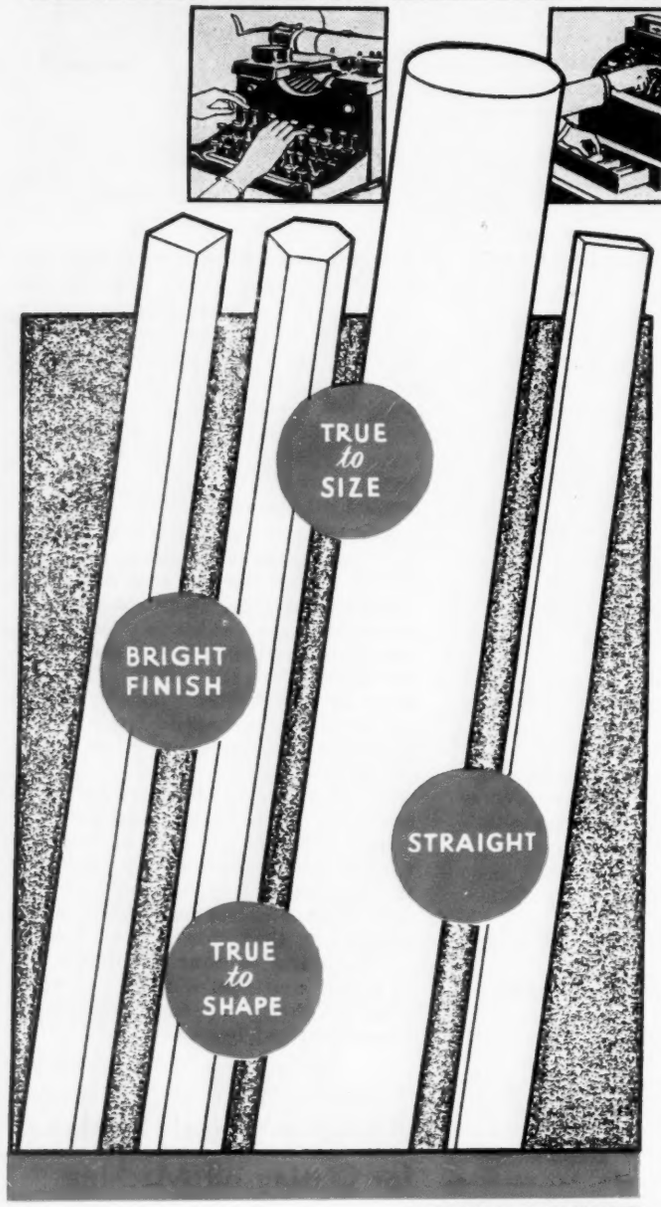
Hunter Saw & Machine Co., Fifty-seventh and Butler streets, Pittsburgh, has developed an abrasive wheel for use on its cutting-off machines. This wheel makes it possible to cut solid metal up to 2 inches in diameter on the machine ordinarily used for cutting light sections, angles and pipe by means of a saw.

These abrasive wheels are 16 inches in diameter and replace the standard 18-inch saw. A new guard has been designed to fully house the wheels and the driving mechanism, in order to insure maximum safety to the operator. Driving flanges for saw or abrasive wheel are identical, the same motor handles either one, and the driving mechanism requires no change.



*Operators are relieved of the necessity of making complicated adjustments, by the simple "electrode indicator" incorporated into this arc welding set developed by USL Battery Corp.*

# PRECISION



**J&L STEEL**
COLD FINISHED

Such diverse devices as typewriters and tractors, cash registers and radios, have one thing in common—*precision of parts.* This precision is essential, not only to their proper operation, but also to permit the interchangeability that makes quantity production possible.

Such precision can come only when parts are manufactured on precision machines using precision stock . . . and "precision stock" is just another way of saying, "J & L steel, cold finished."

## J&L SHAFTING
### *for* EXACTING USERS

Purchasers of J & L shafting expect precision and get it. The advantages do not stop there. In addition to inherent strength and durability, J & L shafting—turned and ground, turned and polished, cold drawn—offers a uniformity that permits duplication of the physical and chemical properties of present shafting at any time in the future. This uniformity is made possible through J & L ownership-control over all raw materials and processes of manufacture from ore to finished product.

**J&L WIDE COLD ROLLED FLATS**

*J & L Wide Cold Rolled Flats in widths up to 12" and thicknesses up to 2½" are adapted to the following uses: stripper plates, backing plates for dies, bed plates, punch pads, jigs and fixtures, parts of die molds, certain machinery parts, pattern plates, and other uses.*

J&L STEEL

## JONES & LAUGHLIN STEEL CORPORATION

AMERICAN IRON AND STEEL WORKS
JONES & LAUGHLIN BUILDING, PITTSBURGH, PENNSYLVANIA

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# Steel Demand Is Slowing Gradually

## All Lines Show Moderate Drop in New Requirements—Production Rate Makes Fractional Gain After Five Weeks Decline—Price Composite Is Fairly Steady

AN ANALYSIS of current demand for steel according to its numerous classifications fails to disclose any important line which is not at a lower level than a week ago, except structurals.

Yet it is evident the market is encountering increasing resistance in this downward tendency; the movement is less pronounced than it would be if certain underlying factors were not continuing to assert themselves, chief of which is that industries are on a strictly consuming basis.

After five consecutive weeks of slowly declining operations the rate this week has risen fractionally to 49-50 per cent, compared with 49 per cent last week, and 57 per cent at the spring peak six weeks ago. Except for a 5-point rise at Buffalo, and a half point decline in eastern Pennsylvania, operations in all important producing districts are on the same plane as a week ago.

Building construction and the automobile industry continue to be the main supports of the steel markets, with pipe and railroads still notable laggards. The former two, however, are retreating slowly. Except for further weakness in scrap, adjustments in foundry iron in eastern Pennsylvania and the more manifest softness in sheet bars, the price situation is unchanged. Barring a general reduction in wages, it still is believed that prices are near the bottom.

Notwithstanding denials by the Ford Motor Co., reports of shrinkage in demand from that source persist in reliable quarters. Three times in April Chevrolet has expanded its steel requirements, and its production now is practically on a par with that of Ford. Other automobile manufacturers are proceeding at a steady pace. The slowing down in Ford production is principally responsible for the moderation in the sum total of steel orders from the automobile industry.

Fresh structural inquiry this week totals 35,000 tons, exclusive of 75,000 tons of shapes and 28,000 tons of cable for the Golden Gate bridge at San Francisco, bids on which close June 17. After a lapse of months, New York is again buying subway steel, taking bids on 5360 tons. Structural awards this week, at 25,000 tons, compare with 21,100 tons last week. For 1931 to date structural awards total 756,597 tons; a year ago 571,555 tons.

Pipe business includes 12,000 to 15,000 tons for Columbia Gas & Electric Corp., booked by National Tube Co., and 9000 tons for the Ohio Oil Co., booked by A. O. Smith Corp. San Francisco opens bids May 6 on 35,000 tons of pipe for its Hetch-Hetchy project.

A preliminary estimate places the number of freight cars awarded in April as 750, compared with 2166 in March. Five hundred cars are on active inquiry.

Prices of cold rolled sheets under the new classification system have been announced by the American Rolling Mill Co. and several other makers which have adopted the plan. The prices in the main conform closely to present market levels on comparable grades, with some gages and qualities slightly higher and some slightly below existing levels. Autobody sheets are unchanged at 3.10c for the base grade. Additional makers, including the American Sheet & Tin Plate Co., are reliably reported to be preparing to adopt similar classifications.

Further curtailment of pig iron production is indicated at Chicago and Pittsburgh, due to heavy furnace stocks. Some foundries are reported to be using a larger proportion of scrap than usual due to the relatively lower price of scrap than that of pig iron. In certain districts, consumers are permitting dealers to throw down scrap on mill yards, with the understanding it is not to be paid for until used. Furnace coke prices continue to soften, and demand from foundries is tapering.

STEEL'S composite this week is off 2 cents to $31.49, due mainly to a readjustment in pig iron prices in eastern Pennsylvania. The average for April was $31.59, 7 cents less than the average for March.

### Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

| | |
|---|---|
| This week (April 29, 1931) | $31.49 |
| Last week (April 22, 1931) | 31.51 |
| One month ago (March, 1931) | 31.66 |
| Three months ago (January, 1931) | 31.71 |
| One year ago (April, 1930) | 34.44 |
| Ten years ago (April, 1921) | 43.84 |

# Comparative Prices of Iron, Steel and Coke

**Representative Market Figures for This Week, Last Month, Three Months and One Year Ago**

| | April 29, 1931 | March 1931 | Jan. 1931 | April 1930 |
|---|---|---|---|---|
| **PIG IRON** | | | | |
| Bessemer, del. Pittsburgh | $18.26 | 18.26 | 18.76 | 20.76 |
| Basic, valley | 17.00 | 16.75 | 17.00 | 18.50 |
| Basic, eastern del. eastern Pa. | 17.50 | 17.25 | 17.25 | 18.76 |
| No. 2 foundry, del. Pittsburgh | 18.26 | 18.01 | 18.26 | 19.76 |
| No. 2 foundry, Chicago | 17.50 | 17.50 | 17.50 | 19.40 |
| *Southern No. 2, Birmingham | 13.00 | 13.00 | 14.00 | 14.00 |
| **No. 2X, Virginia furnace | 18.25 | 18.25 | 18.25 | 18.25 |
| **No. 2X, Eastern del., Phila. | 17.76 | 18.26 | 18.26 | 20.76 |
| Malleable, valley | 17.00 | 17.00 | 17.50 | 19.00 |
| Malleable, Chicago | 17.50 | 17.50 | 17.50 | 19.40 |
| Lake Superior, charcoal, del. Chi. | 27.04 | 27.04 | 27.04 | 27.04 |
| Gray forge, del. Pittsburgh | 17.63 | 17.38 | 17.63 | 19.13 |
| Ferromanganese, del. Pittsburgh | 89.79 | 89.79 | 89.79 | 103.79 |

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $11, Birmingham. **2.25 to 2.75 silicon.

| | | | | |
|---|---|---|---|---|
| **COKE** | | | | |
| Connellsville furnace, ovens | 2.50 | 2.50 | 2.50 | 2.60 |
| Connellsville foundry, ovens | 3.25 | 3.25 | 3.30 | 3.50 |
| **SEMIFINISHED MATERIAL** | | | | |
| Sheet bars, open-hearth, Youngs. | 30.00 | 30.00 | 30.00 | 33.00 |
| Sheet bars, open-hearth, Pitts. | 30.00 | 30.00 | 30.00 | 33.00 |
| Billets, open-hearth, Pittsburgh | 30.00 | 30.00 | 30.00 | 33.00 |
| Wire rods, Pittsburgh | 35.00 | 36.00 | 35.00 | 38.00 |

| | April 29, 1931 | March 1931 | Jan. 1931 | April 1930 |
|---|---|---|---|---|
| **FINISHED MATERIAL** | | | | |
| Steel bars, Pittsburgh | 1.65 | 1.65 | 1.65 | 1.80 |
| Steel bars, Chicago | 1.75 | 1.60 | 1.60 | 1.85 |
| Steel bars, Philadelphia | 1.94 | 1.94 | 1.94 | 2.12 |
| Iron bars, Chicago | 1.80 | 1.70 | 1.70 | 1.95 |
| Shapes, Pittsburgh | 1.65 | 1.60 | 1.60 | 1.80 |
| Shapes, Philadelphia | 1.81 | 1.81 | 1.81 | 1.81 |
| Shapes, Chicago | 1.75 | 1.70 | 1.70 | 1.90 |
| Tank plates, Pittsburgh | 1.65 | 1.65 | 1.65 | 1.80 |
| Tank plates, Philadelphia | 1.85½ | 1.80½ | 1.80½ | 1.95 |
| Tank plates, Chicago | 1.75 | 1.70 | 1.70 | 1.90 |
| Sheets, blue anl., No. 13, Pitts. | 2.00 | 2.05 | 2.05 | 2.25 |
| Sheets, black, No. 24, Pitts. | 2.25 | 2.35 | 2.35 | 2.65 |
| Sheets, gal., No. 24, Pittsburgh | 2.85 | 2.90 | 2.90 | 3.30 |
| Sheets, black, No. 24, Chicago | 2.40 | 2.50 | 2.50 | 2.80 |
| Sheets, blue anl., No. 13, Chicago | 2.15 | 2.20 | 2.20 | 2.40 |
| Sheets, galvanized, No. 24, Chi. | 2.95 | 3.05 | 3.05 | 3.45 |
| Plain wire, Pittsburgh | 2.20 | 2.20 | 2.20 | 2.40 |
| Wire nails, Pittsburgh | 1.90 | 1.90 | 1.90 | 2.25 |
| Tin plate, per base box, Pitts. | 5.00 | 5.00 | 5.00 | 5.25 |
| **SCRAP** | | | | |
| Heavy melting steel, Pitts. | 12.25 | 12.90 | 13.00 | 16.05 |
| Heavy melting steel, eastern Pa. | 10.00 | 10.50 | 10.50 | 13.95 |
| Heavy melting steel, Chicago | 9.25 | 9.75 | 10.00 | 13.00 |
| No. 1 wrought, eastern Pa. | 11.00 | 11.00 | 13.25 | 15.75 |
| No. 1 wrought, Chicago | 8.50 | 9.00 | 9.50 | 13.30 |
| Rails for rolling, Chicago | 11.50 | 12.00 | 13.00 | 15.00 |

# Sheets

**Sellers Are Studying Proposed New Classification Plan—Current Market Is Sluggish**

SHEET PRICES, PAGE 57

**Pittsburgh**—Sheet business continues quiet and spotty despite occasional reports of improvement in specifications. One large producer reported last week's specifications the best in more than a month, although little change is noted in aggregate tonnage. Bright spots include better buying by farm implement builders and growing demand for culvert use. Automotive business is irregular and generally lacking in improvement. Mill operations are unchanged holding at slightly less than 40 per cent. Prices are fairly steady with black sheets continuing 2.25c to 2.35c; galvanized, 2.80c to 2.90c; blue annealed sheets, 2.00c to 2.05c for No. 13 gage, and 1.85c to 1.90c for Nos. 9 and 10. Autobody sheets are 3.10c. Official announcements are lacking but it is indicated that most producers will follow the lead of the American Rolling Mill Co. in adopting the new classifications on sheets to become effective May 1.

**New York**—Sellers generally express considerable interest in the American Rolling Mill Co.'s method of quoting sheets, effective May 1, but have not indicated definitely what action they will take. Black sheets are being quoted 2.25c, Pittsburgh; and blue annealed, 1.85c and 2.00c. Some sellers still are asking $1 a ton higher, but such prices appear nominal. Galvanized sheets are holding at 2.80c to 2.85c, Pittsburgh.

**Philadelphia**—Sheet sellers are studying the proposed new classification plan but are reserving decision. An inquiry for 150 tons of black sheets attracted a number of bidders, 2.25c, Pittsburgh, being the lowest quotation. Blue annealed are 1.85c and 2.00c; galvanized sheets are moving at 2.80c to 2.85c.

**Youngstown, O.**—Sales of common sheets have been tapering off gradually resulting this week in continued idleness for a number of plants at Niles and Warren, and certain units in this city. However, other plants have added a few units to the active list for this week at least and some independents announce a fair prospect for next week's operations. Autobody sheetmakers are receiving specifications in unchanged volume this week from some important automobile builders while receipts from others are lower. Quotations are unchanged on all grades. There appears no disposition as yet on the part of any mill in this district to set a date for changing its quotation system over to fit the new sheet classification.

**Cleveland**—Sheet sellers are preparing to fall in line with the new classifications as announced by a leading interest last week. Consumers have shown little interest in the base prices for the new classifications. The full test of the change will come at a later date. Currently, prices are unchanged. Though 2.15c, Pittsburgh, from the Detroit section is gradually coming to the fore in this district many sellers refuse to meet anything below 2.25c for black sheets. Autobody have become more general at 3.10c, Pittsburgh; and furniture, 3.50c. The 2.90c figure on galvanized is being shaded by jobbers. The market has been featured by a steadiness in shipments.

**Cincinnati**—Sheet mills continue operating at better than 50 per cent. Other mills in this district have failed so far to adopt the classifications initiated by the American Rolling Mill Co.

**Chicago**—Miscellaneous orders for black and galvanized sheets are tapering, but blue annealed business is holding fairly well. Local producers are considering the clasification plan announced by the American Rolling Mill Co. last week, and it is indicated it may be adopted only in modified form. Black and galvanized prices lack strength. Mill prices for No. 24 galvanized are 2.90c to 3.00c. Lack of farm implement and roofing business leaves a broad gap.

# Current Finished Steel Prices

**Prices in cents per pound unless otherwise stated**

## Steel Sheets

**SHEET MILL BLACK, NO. 24**

| | |
|---|---|
| Pittsburgh, base | 2.25c to 2.35c |
| Philadelphia, delivered | 2.54c |
| Gary, Indiana Harbor | 2.35c to 2.45c |
| Chicago, delivered | 2.40c to 2.50c |
| Birmingham, base | 2.40c to 2.50c |
| St. Louis, del. | 2.70½c |

**TIN MILL BLACK, NO. 28**

| | |
|---|---|
| Pittsburgh, base | 2.55c to 2.65c |
| Gary, base | 2.65c to 2.75c |

**GALVANIZED NO. 24**

| | |
|---|---|
| Pittsburgh, base | 2.80c to 2.90c |
| Philadelphia, delivered | 3.09c to 3.19c |
| Chicago, delivered | 2.95c to 3.05c |
| Gary, Indiana Harbor | 2.90c to 3.00c |
| Birmingham, base | 3.00c to 3.05c |
| St. Louis, del. | 3.25½c |

**BLUE ANNEALED SHEETS NO. 13**

| | |
|---|---|
| Pittsburgh, base | 2.00c to 2.05c |
| Chicago, district mills | 2.10c to 2.15c |
| Chicago, delivered | 2.15c to 2.20c |
| St. Louis, delivered | 2.40½c |
| Philadelphia, delivered | 2.29c |
| Birmingham | 2.20c |

**BLUE ANNEALED SHEETS NO. 9-10**

| | |
|---|---|
| Pittsburgh, base | 1.85c to 1.90c |
| Chicago, district mills | 1.95c to 2.00c |
| Chicago, delivered | 2.00c to 2.05c |
| Philadelphia, delivered | 2.14c |
| St. Louis, delivered | 2.25½c |
| Birmingham | 2.05c to 2.10c |

**AUTOMOBILE NO. 20**

| | |
|---|---|
| Pittsburgh, base | 3.10c |

**FURNITURE NO. 24**

| | |
|---|---|
| Pittsburgh, patent leveled.. | 3.50c |

## Tin and Terne Plate

**Prices per 100 pound box Pittsburgh**

| | |
|---|---|
| Tin plate, coke base | $5.00 |

Gary, Ind., base 10 cents higher.

(Per pound)

| | |
|---|---|
| Long ternes, 24, unassorted | 3.15c |

## Wire Products

**(To Jobbers-Merchant Trade)**

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

(Second-quarter asking prices $2 per ton above these levels, except fencing.)

| | |
|---|---|
| Standard wire nails | $1.90 and 2.00 |
| Cement coated nails | 1.90 and 2.00 |
| Galvanized nails | 3.90 and 4.00 |

(Per pound)

| | |
|---|---|
| Polished staples | 2.35c and 2.45c |
| Galvanized staples | 2.60c and 2.70c |
| Barbed wire, gal. | 2.55c and 2.65c |
| Annealed fence wire | 2.35c and 2.45c |
| Galvanized wire | 2.80c and 2.90c |

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

**(To Manufacturing Trade)**

| | |
|---|---|
| Plain wire, 6-9 gage | 2.20c to 2.30c |
| Spring wire | 3.20c to 3.30c |
| Wire, delivered Detroit | 2.50c |
| Nails, delivered Detroit | $2.35 |

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

## Rivets

| | |
|---|---|
| Struc. c.l., Pitts.-Cleve. | 2.75c |
| Struc., c.l., Chicago | 2.85c |

**7/16-in., smaller, Pitts..70, 10 and 5 off
Chi., Cleve. .....70 to 70, 10 and 5 off
**Some makers quoting 70 off with freight allowed on 300 pounds or more.

## Steel Plates

| | |
|---|---|
| Base, Pittsburgh | 1.65c to 1.70c |
| Philadelphia, del. | 1.85½c to 1.90½c |
| New York, delivered | 1.93c to 1.98c |
| Boston, delivered | 2.05c to 2.10c |
| Chicago, base | 1.70c to 1.80c |
| Cleveland, delivered | 1.83½c to 1.88½c |
| Lackawanna, N. Y., base | 1.75c to 1.80c |
| Birmingham, base | 1.80c to 1.85c |
| Coatesville, Pa., base | 1.75c to 1.80c |
| Pacific Coast, c.i.f. | 2.00c to 2.05c |
| St Louis, del | 1.95½c |

## Structural Shapes

| | |
|---|---|
| Base, Pittsburgh | 1.65c to 1.70c |
| Philadelphia, del. | 1.76c to 1.81c |
| New York, del. | 1.90½c to 1.95½c |
| Boston, del. | 2.03½c to 2.08½c |
| Chicago, base | 1.70c to 1.80c |
| Cleveland, delivered | 1.83½c to 1.88½c |
| Lackawanna, N. Y., base.. | 1.75c to 1.80c |
| Birmingham base | 1.80c to 1.85c |
| Pacific Coast, c.i.f. | 2.05c to 2.15c |

## Bars

**SOFT STEEL**

| | |
|---|---|
| Base, Pittsburgh | 1.65c to 1.70c |
| Chicago, base | 1.70c to 1.80c |
| Birmingham base | 1.80c to 1.85c |
| Lackawanna, N. Y., base | 1.70c to 1.75c |
| Pacific Coast, c.i.f. | 2.15c |
| Cleveland, base, local del. | 1.70c |
| Cleveland base, out. del. | 1.65c |
| Philadelphia, del. | 1.94c to 1.99c |
| New York, del. | 1.98c to 2.03½c |
| Boston, del. | 2.05c to 2.10c |
| Pittsburgh, cold finish | 1.80c to 1.85c |
| Pittsburgh, forg. qual. | 1.90c to 1.95c |

**RAIL STEEL**

| | |
|---|---|
| Chicago Heights | 1.60c to 1.65c |
| Eastern mills | 1.55c |

**IRON**

| | |
|---|---|
| Chicago, base | 1.70c to 1.80c |
| New York, delivered | 1.93c to 2.03c |
| Philadelphia, delivered | 1.89c |
| Pittsburgh, refined | 2.75c to 4.25c |

**REINFORCING**

| | |
|---|---|
| Pitts., billet cut lengths | 1.90c to 2.00c |
| Stock lengths, mill | 1.65c to 1.75c |
| Chi., billet | 1.90c to 2.00c |
| Chi., rail steel | 1.60c to 1.70c |
| Chi., rail steel, less carload | 1.90c |
| Philadelphia, cut lengths.. | 2.19c |
| Cleveland, cut lengths | 1.95c to 2.05c |

## Cold Finished Steel Bars and Shafting

| | |
|---|---|
| Base, Pittsburgh, Chicago, Buffalo and Cleveland | 2.10c |
| Shafting, turned and ground, mill | 2.45c to 2.90c |

## Corrosion, Heat Resist. Alloys

**Base, Pittsburgh**

18 per cent chrome, 8 per cent nickel
Sheets, 35c; plates, 31c; bars, 28c.

| | A | B | C | D |
|---|---|---|---|---|
| Bars | 19c | 20.5c | 23c | 28c |
| Plates | 21c | 22.5c | 25c | 30c |
| Sheets | 26c | 27.5c | 30c | 35c |
| Hot strip | 19c | 20.5c | 23c | 28c |
| Cold strip | 28c | 29.5c | 32c | 37c |

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

## Wrought Washers

| | |
|---|---|
| Carloads, Pitts. dist. | $6.50 to $6.75 off |
| Carloads, Chicago dist. | 6.70 to 6.80 off |

## Alloy Steel

**Hot Rolled—F.o.b. Mills**

Alloy Quality Bar Base is 2.65c

| S.A.E. | Alloy Diff. | S.A.E. | Alloy Diff. |
|---|---|---|---|
| 2000 | 0.25 | 1.25-1.75 Ni. | 1.05 |
| 2100 | 0.55 | 5100 .80 - 1.10 Cr. | 0.45 |
| 2300 | 1.50 | 51.00 Cr. spring | 0.20 |
| 2500 | 2.25 | 6100 bars | 1.20 |
| 3100 | 0.55 | 6100 Spring | 0.95 |
| 3200 | 1.35 | Cr., Ni., Van. | 1.50 |
| 3300 | 3.80 | Carbon Van. | 0.95 |
| 3400 | 3.20 | 9250 (flats) | 0.25 |
| 4100 .15 to .25 Mo. | 0.50 | 9250 (rds.,sq.) | 0.50 |
| 4600 .20 to .30 Mo. | | | |

## Strip, Hoops Bands

| | |
|---|---|
| Hot strip, to 6-in., Pitts. | 1.60c to 1.65c |
| Hot strip 6 1/16 to 24-in. Pitts. | 1.50c to 1.55c |
| Hot strip, bands 6 in. and under, Chicago | 1.70c to 1.75c |
| Do. 6 1/16 to 24 in. | 1.60c to 1.65c |
| Cooperage hoop, Pitts. | 1.70c to 1.80c |
| Do, Chicago | 2.00c to 2.10c |
| Cold rolled strip, Pitts., Cleve., 3 tons, over | 2.15c to 2.25c |
| Worcester, 3 tons, over | 2.40c to 2.50c |

## Rails, Track Material

| | |
|---|---|
| Standard bess. and open hearth rails, mill | $43.00 |
| Relay rails, Pitts., 60 to 90 lb. | $24.00 to 28.00 |
| Light rails, 25-45, mills | $34.00 |
| Light rails, Chicago | $36.00 |
| Angle bars, Chi. base | 2.75c |
| Spikes, railroad, mills | 2.70c |
| Spikes, railroad, 7/16-in. and smaller, Pitts. | 2.70c |
| Spikes boat, barge, Pitts. | 3.00c |
| Spikes, railroad, Chi. | 2.80c |
| Track bolts, Pitts., steam roads | 3.80c |
| Do. standard, jobbers | 73 off list |
| Track bolts, Chicago | 3.80c |
| Tie plate, mills | $39.00 |

## Bolts and Nuts

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

**CARRIAGE BOLTS**

All sizes, cut thread ....73 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list ....73 off

**MACHINE BOLTS**

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ....73 off
Tire bolts, 60, 10 and 10 off.
Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

**NUTS**

Semifinished ....73 off

**HEXAGON CAP SCREWS**

Milled ....80-10-10-5 off
Upset 1 in. diam. and smaller....85-10 off

**SQUARE HEAD SET SCREWS**

Milled ....80-5 off
Upset 1 in. and smaller ....80-10-5 off
Upset, larger than 1 in. ....80-5 off

## Cut Nails, Chain, Piling

| | |
|---|---|
| Cut nails, c.l., Pittsburgh | 2.40c to 2.50c |
| do, less carloads, 5 kegs or over, 2.65c to 2.75c; and less than 5 kegs | 2.80c to 2.90c |
| Chain, BB, BBB, 9/16-1½ in. | 33 1/3 off |
| Sheet piling, Pitts. | 1.90c |

# Bars

**Buying Steady at Low Rate—Price Usually at Minimum of Spread—Road Building Helps**

BAR PRICES, PAGE 57

**Chicago**—Bar products are moving as actively as plates and are ahead of structurals. Chief support is furnished by automotive and road-building groups. May automotive schedules are uncertain. Soft steel bars are based on 1.70c, Chicago, while occasional spot odd-lot sales are closed at 1.75c. While bar orders dropped slightly from a week ago, mills remain at about 55 per cent. Average weekly bookings during April made little variation. While ingot consumption by finishing mills declined moderately, it is evident that the capacity added during the two weeks' peak of March was in excess of actual needs.

**New York**—Commercial steel bars are moving currently at 1.70c, Pittsburgh, with little important tonnage to test the market. Contracts are moving at 1.65c, Pittsburgh. Common iron bars are 1.60c to 1.70c, Pittsburgh.

**Philadelphia**—Steel bars are moving generally at 1.65c, Pittsburgh, with small lots occasionally bringing 1.70c. Buying is spotty. Common iron bars are 1.60c, Pittsburgh.

**Pittsburgh** — Bar producers have little occasion to apply the 1.70c price on new business. Most orders are against lower priced contracts. Recent specifications are lighter than earlier in the month, although shipments show only a slight decrease. Orders continue in small lots for early needs.

**Youngstown, O.**—Steel bars appear the one finished steel item stiffly maintaining its price. Sales continue at 1.70c, Pittsburgh, for fill-in purposes, while most shipments are being made at 1.65c on contract. Bar mills are operating at 50 per cent capacity.

**Cleveland**—A falling off in releases from ordinary consuming lines leaves some support only in automotive and reinforcing bar demand, yet both in themselves showing unmistakable signs of easing. April bar sales for one interest will run some 10 per cent below March, thus indicating the trend as the second quarter progresses. The price situation finds 1.70c, Cleveland base, for local delivery, well observed, with the 1.65c, Cleveland base, heard only in outlying sections. One seller in the Detroit district is naming 1.65c, Cleveland base, on bars. The local Cleveland mill is adhering to 1.70c, Cleveland base, locally.

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National Foundries Ltd., Pont Rouge, Que., now is operating the plant formerly known as the Supreme Foundry Ltd.

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## Cold-Finished Bar Demand Eases Slowly

Cold Finished Prices, Page 57

**Pittsburgh** — Specifications for cold-finished steel bars continue to decline slowly. Shipments also have moderated and are smaller than a month ago. Automotive demand is spotty but is tending downward. The market is fairly steady at 2.10c, Pittsburgh.

**Cleveland**—Cold-finished steel bar shapes are showing an easing in specifications commensurate with some declines in commitments from the general run of steel bar consumers. Shipments are below the March rate. The 2.10c, Cleveland base, figure holds unchanged on new buying.

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## Chain Standard Reaffirmed

Washington—The simplified practice recommendation on welded chain has been reaffirmed without change for one year.

# Plates

**Miscellaneous Orders in Fair Volume—Inquiry Lighter—More Barge Activity**

PLATE PRICES, PAGE 57

**New York**—With demand listless plates continue untested at 1.80c, Coatesville, Pa. Material previously under contract is moving at 1.75c. While all indications point to the general contract for foundation work for the New York Central's west-side terminal as going to the P. T. Cox Contracting Co., no official award has been made. William J. Culligan, Bayonne, N. J., is low on the general contract for supplying and installing 200 tons of 60-inch steel pipe for the New York department of water supply, gas and electricity.

The general contractors are asking for bids on 2500 tons of 72 x 60-inch tank plates presumably for a northern New Jersey pipe job.

**Philadelphia**—The price of $1.75, base, Coatesville, Pa., dominates carload business in the plate market, 1.80c applying to smaller lots. Demand is featureless.

**Pittsburgh** — Activity in river equipment continues outstanding in the plate market. Pending work involves 3000 tons of plates and shapes for two steel hulls for United States engineers, St. Louis district, and 1000 tons for a dredge for New York. Barge inquiry for private interests involves a fair tonnage but awards are lacking. Plate shipments are steady, while incoming business remains dull. Specifications are being received against 1.65c contracts but the market is not thoroughly tested and the 1.70c spot figure remains nominal.

**Cleveland**—Plate orders are in fair volume for the majority of sellers, with 1.65c, Pittsburgh, minimum in this district. Inquiry from certain consuming lines has slackened. The Gulf Oil Co. project at Cleveland, requiring 23 tanks, evidently has not been placed with any local boiler or tank fabricator. Interests in the plate market find indications creeping in daily that April will not better March in point of activity, and that mark will remain the high point for the first half of the year.

**Chicago**—Plates let for tank work during April total about 8000 tons, while 3000 to 5000 tons are on inquiry. About 35,000 tons in skelp for pipe line work was shipped during the month, but this amount may be materially decreased in May, depending upon several projects. Plates are quoted 1.70c, Chicago, while 1.75c is obtained for small lots. Forward business is quoted 1.80c.

## Contracts Placed

585 tons, 40-inch welded steel pipe, Los Angeles to Western Pipe & Steel Co., Los Angeles.

250 tons, plates and shapes, two barges for Sun Oil Co., to Nashville Bridge Co., Nashville, Tenn.

200 tons, 30-inch pipe line for Honolulu Iron Works, Honolulu to Montague Pipe & Steel Co., San Francisco.

## Contracts Pending

3000 tons, two steel hulls for United States engineers, St. Louis district; bids open May 6.

1000 tons, dredge for New York; bids

open May 28.

200 tons, 60-inch steel pipe, for New York department of water supply, gas and electricity; William J. Culligan, Bayonne, N. J., low on general contract.

150 tons, sheet piling, 100 tons for Maumee river, O., and 50 tons for Port Clinton, O.

## Semifinished Market Quiet; Prices Nominal

Semifinished Prices, Page 68

**Pittsburgh** — Semifinished steel prices are nominal at recent levels, the quiet character of recent buying giving little test to the general market of $30 for rerolling billets, slabs and sheet bars and $36 for forging billets. Wire rods continue $35 to $37. New business and shipments are lighter than a month ago, requirements of most finishing mills showing a steady decline since the first of the month.

**Buffalo**—Demand for semifinished steel has helped materially in increasing Buffalo's open-hearth furnace operations to the high point of the year.

**Philadelphia** — The market for semifinished steel is sluggish. Consumers' stocks are good and no immediate improvement is expected in shipments. Rerolling billets are $30 Pittsburgh, and forging, $35.

**Youngstown, O.**—The two leading makers here are receiving $30, Youngstown and Pittsburgh, for the small amounts of sheet bars and billets that are moving to consumers. Billet sales have receded to the bare minimum, while sheet bars are being delivered in 100 to 200-ton lots. Nonintegrated sheet mills are operating irregularly.

**Cleveland** — Shipments of sheet bars, billets and slabs are being billed at $30, base, Cleveland and Youngstown, O. New demand is light. The leading merchant producer here continues to operate seven of its 14 open hearths.

**Chicago**—A few orders for billets and sheet bars have been closed for second quarter. Prices are nominal in view of the light buying. Sheet bars are $31, Chicago.

## Discuss Car Wheels

Manufacture and service of locomotive and railroad car wheels were discussed at a conference of the Association of Manufacturers of Chilled Car Wheels, held at Pittsburgh, April 22. Representatives of more than 20 car wheel manufacturing companies attended.

# Railroads

**April Car Purchases Below March—Great Northern Places 25,000 Tons of Rails**

TRACK MATERIAL PRICES, PAGE 57

**New York**—With approximately 750 freight cars placed so far this month, a falling off in bookings for April is indicated. There are approximately 500 cars on active inquiry, but even the early placing of these would not bring the total up to the March figure, which was 2166. Fresh inquiry is exceedingly slack.

**Pittsburgh**—Specifications from railroads against old orders are tending downward, while new inquiry is lacking in practically all products. Rail production is lagging, although fair releases have been received from some roads for fastenings.

**Cleveland**—New inquiry for fastenings or rails is lacking. Rumor is current that the Chesapeake & Ohio as well as the Erie may go to heavier sections but it is unverified and undoubtedly arose from the recent decision of the Pennsylvania to go to 152-pound rails. At present these former named two roads are gradually replacing 110-pound sections with 130-pound ones on main lines. A leading maker of rails has extended its option date from April 1 to July 1 under which the carriers may order 40 per cent additional to their earlier commitments.

**Chicago**—Track fastenings releases remain active. Weekly sales of about 2000 to 2500 tons have been fairly uniform in the last 30 days. No secondary rail buying is in prospect now. Shipments remain fairly heavy on the primary purchases for this season, and it is expected rail mill operations at 50 per cent may be maintained for the greater part of May.

**Birmingham, Ala.**—Ensley works of Tennessee Coal, Iron & Railroad Co. has been awarded contract for 4000 tons of rails by Receivers Powell and Smith of the Seaboard Air Line.

## Car Orders Placed

Canadian National, 250 refrigerator cars, to own shops at Transcona, Man.

Chicago Surface Lines, 21 trolley buses, to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Chicago, Milwaukee, St. Paul & Pacific, four air-dump cars, to Western Wheeled Scraper Co., Aurora, Ill.

Thunder Bay Quarries Co., Pittsburgh, six 25-cubic yard air dump cars, to Koppel Industrial Car Equipment Co., Koppel, Pa.

## Rail Orders Placed

Great Northern, 16,000 tons to Bethlehem Steel Co., Bethlehem, Pa., this is in addition to 9000 to Colorado Fuel & Iron Co., Denver, noted in STEEL of April 23.

Seaboard Air Line, 4000 tons, to Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.

## Locomotives Pending

Chicago, Burlington & Quincy, one gasoline-electric locomotive.

## Railroads Cut Rates To Meet Water Competition

Chicago & North Western and Chicago, Milwaukee, St. Paul & Pacific railroads announce a reduction from 14.5 cents to 8.5 cents per 100 pounds in the freight rate on plates, bars, structural material and a few other heavy finished commodities from the Chicago district to Milwaukee and intermediate points, such as Racine and Kenosha, Wis., in order to meet the growing competition of Great Lakes shipping between Chicago and the Wisconsin consuming points.

The new rate applies only to the products named, in minimum loads of 80,000 pounds. The 14.5 cent rate to Milwaukee still stands on minimum shipments of 40,000 pounds, covering all steel products. Also, the old 12.5 cent rate to Racine still remains on minimum shipments of 40,000 pounds for all steel products. The new rate becomes effective May 20.

The Chicago-Milwaukee rate was advanced more than a year ago from 9 cents to 14.5 cents, and large consumers of steel at Milwaukee, chiefly the A. O. Smith Corp., resorted to water shipments. The new published rates still await approval by the interstate commerce commission.

## More Cars Need Repairs

Washington—Class I railroads on March 15 had 159,662 freight cars in need of repairs or 7.2 per cent of the number on line, according to the car service division of the American Railway association.

This was an increase of 6056 cars over March 1.

Freight cars in need of heavy repairs on March 15 totaled 110,700, or 5 per cent, an increase of 874 compared with March 1.

# Structural Shapes

**Golden Gate Bridge Bids June 17—Difficult Subway Job Out at New York—12,000 Tons in Bridges, Public Work Come Out in West—Awards Are 26,202 Tons**

STRUCTURAL SHAPE PRICES, PAGE 57

**New York**—The first subway inquiry since December is up, 5360 tons, for the Sixth avenue line, Forty-third to Fifty-third streets. A second section follows for bids in about three weeks. The next section to come out will be from Thirty-third to Forty-third streets.

Pennsylvania railroad took bids this week on five bridges: Pine Valley, N. Y., Crafton, N. J., Centerburg, O., Pittsburgh, and Steubenville, O. Fresh inquiry also includes 1200 tons for viaducts in northern New Jersey. Awards are light. There is practically no commercial building, although the New York Central has general contract bids on the St. Johns Park terminal warehouse and a large cold storage plant.

**Boston** — Structurals continue quiet. Pending projects include 1158 tons for a bridge across the Androscoggin river, Maine.

**Philadelphia**—Structural buying is sluggish. Aside from new fair-sized lots on which bids are due this week, there is little in sight for the immediate future. Shapes are 1.76c to 1.81c, Philadelphia, with the inside figure more representative.

**Buffalo**—Inquiry for 400 tons for an addition to the Buffalo general hospital is expected to come before district producers.

**Pittsburgh**—Activity in fabricated structural steel is dragging, improvement lacking in awards and inquiry. Orders and new work generally involve only small lots.

**Cleveland**—Awards are more numerous this week than in some time. Fort Pitt Bridge Works took 705 tons for the John Carroll university and 175 tons in a bridge at Gordonsville, W. Va., for the C. & O. American Bridge took 400 tons in Kelley Island Lime & Transport Co. plant and 155 tons for the B. & O. freight house, Cleveland, went to Ingalls Iron Works. A 125-ton theatre at Fremont, O., was awarded, and Mt. Vernon Bridge Co. took 450 tons in a bridge at Michigan City, Mich. A warehouse for Strong, Carlisle & Hammond Co. will take 200 tons of shapes. Approximately 150 tons goes into a packing plant at Sandusky, O.

**Chicago**—Structural inquiries of about 12,000 tons are almost entirely bridge work of public projects. Included is 4000 tons for Pennsylvania railroad track elevation work in Chicago. Among awards is 6000 tons for the outer drive bridge. Plain material is based on 1.70c, Chicago, while 1.80c is asked on future work. Texas highway departmen will buy 2400 tons for bridge work, and Wisconsin about 1000 tons. A moderate tonnage of structurals, plates and other material is expected from the Boulder dam construction.

## Contracts Placed

6000 tons, outer drive bridge, Chicago, to unstated fabricator.

3500 tons, Mellon institute building, Pittsburgh, to McClintic-Marshall Corp., Bethlehem, Pa.

2200 tons, science building, Century of Progress, to McLennan Construction Co., Chicago.

1600 tons, Klingle Valley bridge, Washington, to McClintic-Marshall Corp., Bethlehem, Pa.; W. P. Thurston Inc., Richmond, Va., general contractor. Job also includes 93 tons welded trusses.

950 tons, government lock No. 15, Rock Island, Ill., to Worden-Allen Co., Milwaukee.

750 tons, state hospital, Holmdel, N. J., to unstated fabricator.

705 tons, John Caroll university buildings, Cleveland, to Fort Pitt Bridge Works, Pittsburgh.

700 tons, public school 229, Benson avenue, Brooklyn, N. Y., to Easton Structural Steel Co., Easton, Pa.; George F. Driscoll Co., general contractor.

700 tons, addition, Lincoln hospital, Bronx, N. Y., to Allied Bronze & Architectural Iron Works, Bronx; D. M. & W. Construction Co., general contractor. Previously reported going to unstated fabricator.

700 tons, Mississippi river dam at Rock Island, Ill., to Worden-Allen Co., Milwaukee, Wis.

600 tons, R-K-O theater, Denver, to Midwest Steel & Iron Works Co., Denver.

545 tons, bridge, Fort Lee, N. J., carrying route S 1, section 1, over route 5, to Harris Structural Steel Co., New York.

525 tons, bridge over Santa Fe railroad tracks, Merced, Calif., to Pacific Coast Engineering Co., Oakland, Calif.

500 tons, pier No. 15, San Francisco, to Moore Drydock Co., Oakland, Calif.

500 tons, Hydraulic Laboratory building, bureau of standards, Washington, D. C., to Bethlehem Construction Co., Bethlehem, Pa.

450 tons, bridge, Michigan City, Ind., to Mt. Vernon Bridge Co., Mt. Vernon, O.

400 tons, compressor building for Peoples Gas Light & Coke Co., Chicago, to Gage Structural Steel Co., Chicago.

400 tons, plant for Kelley Island Lime & Transport Co., Clay Center, O., to American Bridge Co., Pittsburgh.

350 tons, Greentree inn, Westchester, Pa., to unstated fabricator.

325 tons, office and bank building addition, Peoria, Ill., to Illinois Steel Bridge Co., Jacksonville, Ill.

300 tons, high school building, Manitowoc, Wis., to Manitowoc Ship Building Co., Manitowoc.

300 tons, piling for subway work, Philadelphia, to Bethlehem Steel Co., Bethlehem, Pa., through Keystone Construction Co.

300 tons, bridge, route 110, section 5, New Jersey, to McClintic-Marshall Corp., Bethlehem, Pa.

250 tons, printing plant, Yonkers, N. Y., to Levine Iron Works, Yonkers.

250 tons, hospital building, Elmira, N. Y., to American Bridge Co., Pittsburgh.

250 tons, lock gates, Illinois river, Lagrange, Ill., to Independent Bridge Co., Pittsburgh.

200 tons, Veterans hospital, Waco, Tex., to Decatur Iron & Steel Co., Decatur, Ala.

200 tons, nurses' home, Greenpoint hospital, Brooklyn, N. Y., to Berkshire Iron Works, Brooklyn; Seamon Construction Co., general contractor.

200 tons, Odd Fellows' hall, Bradford, Pa., to Rogers Structural Steel Co., Corry, Pa., instead of Griffith-Custer Steel Co., Johnstown, Pa., as noted in STEEL of April 23.

175 tons, New York state highway bridge, to American Bridge Co., Pittsburgh.

175 tons, bridge, Gordonsville, W. Va., for Chesapeake & Ohio railroad, to Fort Pitt Bridge Works, Pittsburgh.

167 tons, bridge, Starin avenue, Buffalo, to American Car & Foundry Co., New York.

167 tons, apartment, Pacific street, San Francisco, to Western Iron Works, San Francisco.

165 tons, Minnesota bridge work, to Minneapolis-Moline Power Implement Co., Minneapolis.

155 tons, Baltimore & Ohio freight house, Cleveland, to Ingalls Iron Works, Verona, Pa.

145 tons, apartment, Nostrand avenue and Crown street, Brooklyn, N. Y., to S. Holland & Son, Brooklyn.

125 tons, theatre, Fremont, O., to Brown Steel Co., Columbus, O.

120 tons, Indiana bridge work, to Vincennes Bridge Co., Vincennes, Ind.

115 tons, additions, Elk Tanning Co., Ridgway, Pa., to Rogers Structural Steel Co., Corry, Pa.; Hyde-Murphy

## Awards Compared

| | Tons |
|---|---|
| **Awards this week** | **26,202** |
| **Awards last week** | **21,100** |
| **Awards two weeks ago** | **20,395** |
| **Awards this week in 1930** | **41,060** |
| **Av. weekly awards, 1930** | **35,242** |
| **Av. weekly awards, 1931** | **42,098** |
| **Av. weekly awards, March** | **64,860** |
| **Total awards to date, 1930** | **571,555** |
| **Total awards to date, 1931** | **757,799** |

Co., general contractors; sash and bar joist to Truscon Steel Co., Youngstown, O.

110 tons, hangar, Sacramento, Calif., to Palm Iron Works, Sacramento.

108 tons, gas range building for H. Weiskittel Co., Baltimore, to Belmont Iron Works, Philadelphia.

100 tons, H columns for bridge over Santa Fe railroad tracks near Merced, Calif., to Pacific Coast Steel Corp., San Francisco.

100 tons, St. Ignatius school, Chicago, to Hansell-Elcock Co., Chicago.

100 tons, state highway bridge, Constable, N. Y., to Lehigh Structural Steel Co., Allentown, Pa.

100 tons, alterations, state hospital, Central Islip, N. Y., to National Bridge Co., Long Island City, N. Y.

100 tons or more, school, Clifton, N. J., to John J. Cook & Son, Clifton, N. J.

## Contracts Pending

103,000 tons, Golden Gate bridge, San Francisco. 75,000 tons shapes and 28,000 tons of steel cable; bids June 17. Revised tonnage from figure noted in STEEL for April 23.

5360 tons, first section, Sixth avenue, subway, New York; bids May 19.

4000 tons, postoffice and federal building, Kansas City, Mo.; bids May 15.

4000 tons, Pennsylvania railroad track elevation work, Chicago, including 23 street subways.

2500 tons, courthouse, Berks county, Pa.

2400 tons, bridge work for Texas highway department.

1500 tons, high level bridge for Burnaby, B. C.

1158 tons, Androscoggin river bridge, Maine.

1000 tons, bridge work for Wisconsin highway department.

750 tons, Cardozo building, St. Paul.

700 tons, bridge over East river, New Glasgow, N. S., for department of highways, provincial government, Halifax, N. S.

650 tons, viaduct, to carry route 4, section 3, across Palisade avenue, West Shore railroad and Windsor road, Teaneck, N. J.; bids May 4, New Jersey state highway commission.

550 tons, Ohio state highway bridges; bids in April 28.

545 tons, viaduct, to carry route 4, section 3, across Dean street, North Railroad of New Jersey and Hasse place, Englewood, N. J.; bids May 4, New Jersey state highway commission.

525 tons, addition to Blaumer's store, Ninth and Market streets, Philadelphia; bids May 1.

410 tons, state emergency relief construction, Wisconsin; bids April 28.

400 tons, addition, Buffalo general hospital; Kidd & Kidd, Buffalo, architects; bids about May 15.

400 tons, highway bridge at Guthrie, Okla.

250 tons, bridge, Phillipsburg, Ont. for county council.

200 tons, warehouse, East Twenty-eighth street and St. Clair avenue, Cleveland, for Strong, Carlisle & Hammond Co., Cleveland.

175 tons, warehouse for port commission, Oakland, Calif., bids April 27.

150 tons, Walldock Packing Co. plant, Sandusky, O.; Anders & Reimers, architects, Cleveland.

150 tons, bridge, Lucas county, Toledo, O.

120 tons, state highway span, Waupaca county, Wis.; bids April 30.

107 tons, apartment house, Cambridge, Mass.

# Concrete Bars

**Western Road Work Slow in Allocation—Inquiry Noted for Bridges and Highway Work in East—Awards Fail to Show Volume Near Year's Weekly Average**

REINFORCING BAR PRICES, PAGE 57

**New York**—Bridge and highway work continues to account for the bulk of fresh inquiry for concrete bars. On smaller lots prices are firmer, but concessions continue on large contracts. For the first section of the Sixth avenue subway 450 tons will be required. Fresh inquiry for New Jersey highways and bridges calls for about 800 tons. More than 1000 tons have been placed for new state highway and bridge construction.

**Boston**—Concrete bar business has had another fairly good week with a number of small projects continuing to loom. Besides 150 tons in small jobs, a contract for 225 tons went to the Concrete Steel Co. for a hospital building at Beacon, N. Y.

**Philadelphia**—Reinforcing business is featured by 200 tons foundation work for the new Pennsylvania station, awarded to Taylor-Davis Inc. The market is 1.60c to 1.65c, Pittsburgh.

**Buffalo**—An additional warehouse at the new East Buffalo terminal of the Erie and Nickel Plate railroads takes 250 tons of reinforcing steel. This increases total reinforcing inquiry pending at the terminal to 600 tons.

**Pittsburgh**—Reinforcing bar business, made up mostly of small lots, shows some seasonal improvement. Incoming orders are slightly heavier than in March. Prices continue slightly unsteady, 1.65c usually being quoted for stock lengths.

**Cleveland**—Two contracts for 150 tons each have been placed. The John Carroll university went to Paterson-Leitch Co., Cleveland, and Hardware & Supply Co., Akron, O., took the tonnage involved in the Talmadge avenue, Akron, O., bridge. Inquiry is slack in building work requiring reinforcing bars.

**Chicago**—While road work offers much promise in the reinforcing bar market, general contractors have been slow to distribute orders to bar fabricators. Rail steel bars for road, bridge and culvert work are firmer at 1.65c to 1.75c, A local contractor has let 600 tons for Veterans' hospital buildings at Waco, Tex. About 250 tons has been awarded for St. Charles hospital, Aurora, Ill., and 200 tons is pending for another hospital there.

**Birmingham, Ala.**—Veterans hospital, Tuscaloosa, Ala., to be built immediately will soon have specifications out for concrete bars.

## Awards Compared

| | Tons |
|---|---|
| **Awards this week** | **3,959** |
| **Awards last week** | **5,600** |
| **Awards two weeks ago** | **1,948** |
| **Awards this week in 1930** | **4,510** |
| **Av. weekly awards, 1930** | **6,990** |
| **Av. weekly awards, 1931** | **6,992** |
| **Av. weekly awards, March** | **12,367** |
| **Total awards to date, 1930** | **119,708** |
| **Total awards to date, 1931** | **125,861** |

## Contracts Placed

1100 tons, grain elevator for Chicago Elevator Properties Inc., to Inland Steel Co., Chicago.

1000 tons, Attica State prison, New York state, to Capitol Steel Co., Brooklyn, N. Y.

600 tons, Veterans' hospital buildings at Waco, Tex., to Laclede Steel Co., St. Louis.

254 tons, paving in San Mateo county, Calif., to unstated company.

250 tons, foundation, port authority, inland freight terminal, New York, to Jones & Laughlin Steel Corp., Pittsburgh, through Turner Construction Co.

250 tons, St. Charles hospital, Aurora, Ill., to Truscon Steel Co., Youngstown, O.

225 tons state hospital, Beacon, N. Y., to Concrete Steel Co., Pittsburgh.

200 tons, foundation work, Pennsylvania station, Philadelphia, to Taylor-Davis Inc., Philadelphia, through Keystone Construction Co.

175 tons, county highways, New Jersey, including 100 tons of mesh and 75 tons of bars, to Truscon Steel Co., Youngstown, O.

150 tons, John Carroll university project, to Paterson-Leitch Co., Cleveland, through Hunkin Conkey Co., general contractor.

150 tons, bridge, Talmadge avenue, Akron, O., to Jones & Laughlin Steel Corp., Pittsburgh, through Hardware & Supply Co., Akron.

150 tons, Battle Hill school, White Plains, N. Y., to Tidewater Steel Co., Hagerstown, Md., through D. M. & W. Construction Co., contractors.

130 tons, county building, White Plains, N. Y., Westchester county, to Carroll-McCreary & Co., New York; W. L. Crow Construction Co., general contractor.

125 tons, bridge, Prairie du Chien, Wis., to LaClede Steel Co., St. Louis.

100 tons, New York Telephone Co.

(*Concluded on Page 65*)

# Strip

**Slack Demand Met from All Classes of Consumers—Prices Fail to Hold at Firm Level**

STRIP PRICES, PAGE 57

**Pittsburgh**—Strip demand is off further while shipments and operations show a slight decrease. Production currently is around 40 per cent for hot mills while cold strip output remains around 20 per cent. Prices show little change except that narrow hot strip has followed wide material in developing a range of $1 a ton from the recent market. Prices usually are 1.50c to 1.55c for wide strip and 1.60c to 1.65c for narrow. Cold-rolled strip continuues 2.15c to 2.25c.

**New York**—Strip demand has never been more quiet, in the opinion of some leading sellers here. Hot strip is 1.55c, Pittsburgh, for wide and 1.65c for narrow. Cold-rolled is 2.25c, Pittsburgh.

**Philadelphia**—Steel strip continues to lag in demand and sales. Hot-rolled is untested at 1.55c, Pittsburgh, for wide and 1.65c for narrow. Cold-rolled is 2.25c, Pittsburgh.

**Youngstown, O.**—Some improvement in incoming volume of specifications for hot and cold-rolled strip is noted this week. This has led to important makers being compelled to operate certain mills overtime on some widths, while others of their strip mills slowed down proportionately. Quotations for all forms and widths have not changed in the week.

Stripmakers in this district, which largely are associated with their own sheet mills, view with satisfaction the proposed new strip and sheet classification, as recently announced by the American Rolling Mill Co. This is in the hope that threatened trade warfare between these two flat-rolled products may be averted.

**Cleveland**—Shipments of both hot and cold-rolled strip hold at the level that prevailed through March and material moving to automotive interests also is steady. An opinion prevails that automotive production level will not rise higher than at present, at least in first half. Prices at 2.25c, Cleveland, on cold-rolled and 1.55c and 1.65c, Pittsburgh on hot rolled are fairly firm but might yield to large tonnage. Rumored concession of $1 a ton on hot-rolled are prevalent, making this figure 1.50c and 1.60c, respectively, for wide and narrow.

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Chain Belt Co., Milwaukee, has moved its Buffalo office from 763 Ellicott square to 1807 Elmwood avenue, T. F. Cocker is district manager.

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## Operations by Districts Show Fractional Gain

**Pittsburgh**—Ingot production is unchanged at slightly below 50 per cent as well as blast furnace schedules with 21 of the 54 steelworks stacks in the district active. Jones & Laughlin Steel Corp.'s lighting of another stack has been offset by National Tube Co. banking one. Sheet schedules are unchanged at 37, while tin plate has declined to slightly above 75. Strip production is lower at 40. Pipe is unchanged at 35 per cent.

**Buffalo**—District steelworks increased operations this week five points to 59 per cent capacity, equaling the highest rate attained this year.

**Philadelphia**—Eastern ingot operations are down fractionally this week at 45-46 per cent, against 46 last week. A leading mill is at 50 per cent.

**Youngstown, O.**—Steel operations are 43 per cent of capacity this week, unchanged from last week. Republic Steel Corp. at 50, Carnegie at 50 and Sheet & Tube Co. at 30 to 35 per cent report no significant change. Sharon Steel Hoop plants again are operating at approximately 55, while Newton Steel's Ohio plant is again at 65 per cent.

**Cleveland**—Ingot operations are continuing just shy of the 60 per cent mark, with 19 of 34 open hearths active. Taking off of an independent furnace was countered with the addition of one in another plant.

**Chicago**—Ingot production rate is unchanged at 50 per cent capacity. Of the district's 36 blast furnaces, 16 are active.

**Birmingham, Ala.**—The same number of open hearths are active this week, 16 of 23, and ingot capacity continues 65 per cent engaged.

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## Warehouse Gains in April Are in Small Margin

Warehouse Prices, Page 79

**New York**—Volume is slightly upward in warehouse buying, April running just ahead of March. Demand is well distributed. Prices are unchanged and firmer. Cold finished steel prices are firm with buying slightly improved.

**Philadelphia**—While one leading jobber reports business at the March rate, most others report a decline. However, the general volume of the past two weeks is maintained. Prices are unchanged.

**Buffalo**—Warehouses report improved demand for iron and steel for building construction. This betterment has stimulated general business to a considerable extent.

**Cleveland**—April gives promise of bettering March in point of sales volume, due largely to the impetus given in the first ten days of this month. Prices are unchanged.

**Detroit**—Warehouse orders have been more numerous during the past two weeks. Tonnage per order, however, remains light. Prices are unchanged.

**Cincinnati**—Slight improvement in demand for building materials may sway tonnage of warehouses here to a better report than in March. Prices are unchanged .

**Chicago**—Most warehouses in this territory report a small margin of gain in April sales. One jobber reports an all-time record day's bookings of individual orders on April 20. Prices are steady.

**St. Louis**—The last half of April has witnesed an easing off in demand for iron and steel goods from store. New orders failed to match the volume earlier in the period, and specifications have tapered off perceptibly. Jobbers express disappointment at the failure of demand from the general manufacturing trade to improve.

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## Tin Plate Demand Equal To 1930; Operations Lag

Tin Plate Prices, Page 57

**Pittsburgh**—Tin plate specifications are fairly steady but operations continue to tend downward. This decline, mainly of a seasonal nature, brings production to slightly above 75 per cent. Demand from leading can-makers so far this year have closely approximated the volume for the corresponding 1930 period but operations reflect the substantial drop in export tonnage. Tin plate continues $5, Pittsburgh, per base box.

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## Will Add Equipment

Follansbee Bros. Co., Follansbee, W. Va., has authorized, through its board of directors, the installation of conveying equipment and other machinery to improve production.

## Concrete Bars

(*Concluded from Page* 61)

building, Buffalo, to unstated fabricator.

100 tons, open-air theatre, North Highland avenue, Los Angeles, to unstated company.

## Contracts Pending

1600 tons, state emergency relief construction, Wisconsin; bids April 28.

1100 tons, cover of Compton hill reservoir, water commissioner, city hall, St. Louis.

450 tons, highway, route 40, section 6, Buddtown-Four Mile road to Ocean county line, New Jersey; bids May 4, New Jersey state highway commission. Work also includes three small span bridges.

450 tons, subway, Sixth avenue, Forty-third to Fifty-third street, New York.

400 tons, state hospitals, Connecticut.

305 tons, bridge over San Dieguito river, Calif., bids received.

290 tons, filtration plant, York, Pa.

265 tons, viaduct, to carry route 4, section 3, across Dean street, Northern Railroad of New Jersey and Hasse place, Englewood, N. J.; bids May 4, New Jersey state highway commission.

250 tons, Loblow Grocery Co. building, Buffalo; bids soon.

255 tons, Hetch Hetchy pipe line, San Francisco; bids May 6.

250 tons, school house, Charlestown district, Boston.

185 tons, courthouse, Reading, Pa.

150 tons, viaduct, to carry route 4, section 3, across Pallisade avenue, West Shore railroad and Windsor road, Teaneck, N. J.; bids May 4, New Jersey state highway commission.

125 tons, bridge, Ossining, N. Y.

112 tons, bridge over Santa Ana river, Calif., bids May 13.

# Personals

(*Concluded from Page* 22)

members being Carl A. Johnson, president of Gisholt Machine Co., Madison, Wis., Louis A. Lecher, attorney, Milwaukee, and T. Johnson Ward, Cassatt & Co., Philadelphia, investment bankers.

□ □ □

R. C. Rolfing, vice president of Oliver Farm Equipment Co., Chicago, in charge of manufacturing and engineering, has resigned and will spend several months in travel.

□ □ □

E. M. Rase, of the Freyn Engineering Co., Chicago, has sailed for Russia to become part of the staff of the Freyn Engineering Co. doing consultation work for the Russian iron and steel industry.

□ □ □

H. F. Holbrook, of New York, was elected treasurer and general manager of the W. A. Riddell Co., Bucyrus, O., manufacturer of road building and brick making machinery. He succeeds George M. Schmidt.

W. G. Beebe, office manager, was elected to succeed Mr. Schmidt as secretary.

□ □ □

J. D. Roberson, of the Dallas, Tex., office of American Cast Iron Pipe Co., Birmingham, Ala., was recently transferred to the New York office at 117 Liberty street. He will assist E. W. Herrmann, eastern and export sales manager.

□ □ □

Francis Buckingham, connected with testing machines and testing machine equipment industry for the past 18 years, has been appointed sales engineer for Baldwin-Southwark Corp., Philadelphia.

□ □ □

Stanley W. Stedfast has been made secretary and assistant to the president of Stedfast & Roulston Inc., Boston, machine tools. He was graduated in 1924 from Massachusetts Institute of Technology and also is a graduate of Norwich university.

□ □ □

William Thompson, assistant to the president of American Steel & Wire Co., Cleveland, will be retired May 1 under the terms of the revised pension plan of the United States Steel Corp. He was born in England Oct. 11, 1857, and located in the United States in August, 1882. He was employed by Joliet Steel Co., Chicago, and remained with it and its successor, Illinois Steel Co., until Dec. 31, 1898. He was then transferred to American Steel & Wire Co., Cleveland, as assistant to the president, serving in that capacity 32 years. His total service was 48 years, 8 months.

□ □ □

W. H. Benduhn, 664 Mission street, San Francisco, has been appointed Pacific Coast representative for Young Radiator Co., Racine, Wis., manufacturer of radiators, cooling systems and heating units.

□ □ □

Herbert C. Coy, owner of the Coy laboratories of Chicago, has resumed control of Coy Mfg. Co., Crawfordsville, Ind., maker of metal products. He succeeds James L. Rubel, to whom he sold the business in October, 1928, but who resigned early in March, this year.

□ □ □

W. C. Schmeling has been elected president and general manager of Wisconsin Art Bronze & Iron Co., Milwaukee, recently organized. He has been manager of the Milwaukee plant of General Bronze Corp., for two years.

Fred Van Kooy is vice president of the new company, and A. R. Stark secretary-treasurer.

# Pipe

**Two Large Line Projects Reported Placed—Cast Inquiry Off in East**

PIPE PRICES, PAGE 79

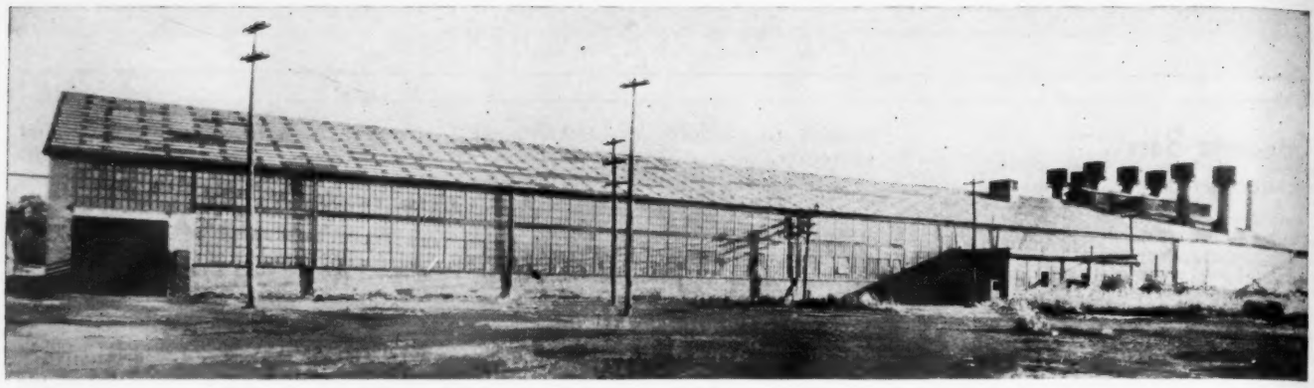
**Chicago**—About 2500 tons of cast pressure pipe has been awarded for municipalities in this territory, while private work is tapering. Huron, S. D. placed 350 tons of large size pipe, and Cedar Rapids, Iowa, 400 tons. Conneaut, O., has awarded 700 tons of 20-inch. Pipe producers are obtaining $45, delivered Chicago, for some of the private work, while the minimum for public lettings is $42, delivered. Utility buying for the spring season is virtually completed.

**Philadelphia**—Pennsylvania railroad is inquiring for 2000 tons of 10, 18 and 20-inch welded steel pipe for its new station. Atlantic Refining Co. is contemplating approximately 5200 tons of 6⅝-inch steel pipe for a 100-mile line in Pennsylvania, although no inquiry has been issued.

**New York**—Cast pipe prices are still soft and fresh inquiry has slumped. Under $34, eastern foundry, is noted on recent business. More than 750 tons are up for a sewer in Westchester county and 3700 tons still pend for the Ward Island disposal plant. White Plains has bids on 300 tons. Delay in selling bonds is reported to have held up at least one Long Island municipal waterline project. A highly unsettled condition prevails in the jobbing market of butt and lapweld pipe.

**Washington** — Despite vigorous protests from rival contractors and over the recommendations of the water department of the District of Columbia, district commissioners have awarded contract for 230 tons of pipe fittings to Herbert Kennedy Co. Inc., New York, which will provide French instead of American products.

**Pittsburgh**—Line pipe continues to be the center of interest in the market for tubular products in view of quietness in standard pipe, oil country goods and tubing. The line of the Ohio Oil Co., involving 9000 tons of 10-inch pipe, has been placed with the Milwaukee producers, while a local mill is understood to have booked 12,000 to 15,000 tons of 18 and 20-inch



Cold Finished Bar Steel Plant of The Western Automatic Machine Screw Co., Elyria, Ohio

# Hauser-Stander Pickling And Acid Storage Tanks

Tanner's Vat with Paddle Wheel
Tanners and Chemists Drums
Rubber Lined Storage Tanks
Rubber Lined Tank Car
20 ft. Elliptical Tank

Here is another plant where Hauser-Stander Tanks are used. Hauser-Stander Pickling and Acid Storage Tanks are standard equipment in the representative iron and steel mills of America. Our careful selection of materials is one of the reasons why. For example—only about one log in a whole trainload is considered good enough to be made into a Hauser-Stander Tank. Muriatic Acid is stored in Hauser-Stander Rubber-lined Tanks.

Hauser-Stander Pickling and Acid Storage Tanks are made of Long Leaf Yellow Pine or Douglas Fir from four to twelve inches thick—depending upon size of tank and service required. All tie rods together with nuts and washers are of acid-resisting bronze or Monel Metal.

Consult us regarding *your* pickling problems. We design as well as manufacture and can make tanks to your order lined with lead, rubber, or protective wood, or can meet any particular requirements relative to the solution you employ, its temperature, material to be pickled, stress and strain, and all such important factors.

*"We Win With Quality"*

## The Hauser-Stander Tank Co.

Cincinnati, Ohio

pipe for a line of the Columbia Gas & Electric Corp.

**Birmingham, Ala.**—Lettings during the past week totaled several thousand tons of various sizes, the Far West being the best customer. Production still is above 60 per cent of capacity. Prices are weak and reports are current that concessions are being made on the $35 to $36 base, 6-inch and oversizes.

## Cast Pipe Placed

2795 tons, Los Angeles, allocated as follows: 1400 tons to American Cast Iron Pipe Co.; 800 tons to McWane Cast Iron Pipe Co.; 135 tons to National Cast Iron Pipe Co., all of Birmingham, Ala., and 460 tons to United States Pipe & Foundry Co., Burlington, N. J.

700 tons, 20-inch pipe, Conneaut, O., awarded through contractor to unstated interest.

400 tons, Omaha, Nebr., to American Cast Iron Pipe Co., Birmingham, Ala.

400 tons, 24 to 36-inch pipe, Cedar Rapids, Iowa, awarded through contractor to unstated interest.

350 tons, 24-inch pipe and larger, Huron, S. D., awarded through contractor to unstated interest.

230 tons, fittings, for water department, District of Columbia, to Herbert Kennedy Inc., New York, representing French interests.

150 tons, 24-inch, Westchester county, to Warren Foundry & Pipe Co., Phillipsburg, N. J.; Bergen Construction Co., general contractor.

## Steel Pipe Placed

9000 tons, 10-inch seamless, for Ohio Oil Co., Findlay, O., to A. O. Smith Corp., Milwaukee.

Unstated tonnage, approximately 12,000 to 15,000 tons, 18 and 20-inch, line pipe for Columbia Gas & Electric Corp., New York, reported placed with Pittsburgh district mill.

## Cast Pipe Pending

1136 tons, Milwaukee, bids close May 5 for the following quantities: 856 tons 20 to 6-inch plain bell and spigot; 15 tons 20 to 6-inch double spigot; 131 tons 20 to 12-inch lugged; 28 tons 20 to 12-inch double spigot. Alternate on items a and b, on centrifugal pipe; also: 48 tons 20-inch specials; 37 tons 16-inch specials; 12 tons 12-inch specials; 6 tons 8-inch specials.

760 tons, 18 to 24-inch, Westchester county sanitary sewer commission; bids May 1.

300 tons, up to 20-inch, White Plains, N. Y.; bids in.

Unstated tonnage. 3000 feet 12-inch, 2600 feet 8-inch and 10,000 feet 6-inch; Appleton, Wis. alternate bids May 1 on class C and class 250 centrifugal pipe.

## Steel Pipe Pending

5200 tons, 6⅝-inch steel pipe, 100-mile line in Pennsylvania for Atlantic Refining Co.; inquiry not yet issued.

2000 tons, 10, 18 and 20-inch welded, for new passenger station, Philadelphia, Pennsylvania railroad.

# Wire

**Buying Is Below Shipment Rate —April Total Fell Below That of March—Jobbers Not Active**

WIRE PRICES, PAGE 57

**Chicago**—Almost no forward contracting for wire products is noted. Jobber orders are not up to expectations. April business was about 10 per cent under March. Wire nails are quoted $1.95 to $2.05, Chicago or western mills. Common wire products sales in Twin Cities territory lead other distribution points.

**Pittsburgh**—New business in wire products lacks improvement and continues considerably lighter than the rate of shipments. Manufacturers' wire demand has moderated in recent weeks and orders for jobbing products also are in smaller lots. Producers usually are quoting the higher prices named for second quarter but the market remains quotable at a range. Wire nails are $1.90 to $2 to jobbers, with plain wire usually 2.20c and wire rods $35 to $37.

**Worcester, Mass.**—Wire production shows little change from the 50 per cent which has been maintained for several weeks. Some improvement has been noted from building and electrical sources but gains and losses in special fields offset one another and keep the average level. The unsatisfactory price situation remains.

**New York**—Buying of wire products continues to drag, with nails moving generally at $1.90, Pittsburgh, and plain bright wire at 2.20c, Pittsburgh. The advance of $2 a ton announced some time ago on these products has failed to take hold to date, although admittedly there has been little to test the situation.

**Cleveland**—Sales by a leading interest continue moderately good with a recent increase in mill operation indicative of a slightly better trend among manufacturers' wire consumers and a continued good flow of releases to jobbers. Bolt and nut makers are on fair schedules. The price continues unchanged and of a mixed character, with wire tonnage on books still to be released at the lower figures. Nominally, nails are $2 and $2.10 a keg, wire is 2.30c, but without test. Shipments are fairly steady.

## Bolts, Nuts, Rivets Show No Gain Over March

Bolts, Nuts, Rivets Prices, Page 57

**Pittsburgh**—Demand for bolts, nuts and rivets is quieter, following a slight gain during early April. Business this month shows no improvement over March. Despite recent reports producers plan no changes in discounts and the market remains fairly steady at 73 off for bolts and nuts and 2.75c, Pittsburgh, for large rivets.

**Cleveland**—Bolt and nut orders continue moderately good without material change from week to week. However, for the month, April gives promise of bettering March in a leading local plant by approximately 10 per cent. Plant operations are spotty, some departments at five days weekly. Price is unchanged at 73 off list. Rivets likewise are unchanged at 2.75c, Cleveland.

**Chicago** — Automotive specifications for nuts and bolts are steadier than in any other consuming line. April business is about 10 per cent below March, but nut, bolt and rivet producers are maintaining 40 per cent operations. Estimates are that April sales probably were 50 per cent under last year. Some of the low jobbing prices have been withdrawn. Small rivets are firmer at 70 to 70, 10 and 5 off.

## Iron Ore Contracts Closed At Last Year's Prices

Iron Ore Prices, Page 68

**Cleveland**—Business in the Lake Superior iron ore market is limited almost entirely to arrangements between consumers and their regular sources of supply. These are being made at the same prices as prevailed last year, producers report. Nothing is developing in the open market. One producer booked considerably more than 100,000 tons this week for a regular customer at last year's prices. It appears to be the disposition of producers to hold firmly to those levels, and they say comparatively little pressure has been brought by blast furnace interests. Some consumers have ore still due them on last year's contracts. Operators are not disposed to force consumers to a literal fulfillment of tonnage specifications in long term contracts. The operators prefer to take "the rap" this year, moving slowly and clearing the situation for good operations next season, rather than dragging it out for two years.

# Raw Material Prices

## Pig Iron

**Per Gross Ton**

**FOUNDRY, NO. 2**

| | |
|---|---|
| Chicago furnace | $17.50 |
| Pittsburgh, dist. fur. | 17.50 |
| Pittsburgh, delivered | 18.13 to 18.63 |
| Valley furnace | 17.00 |
| Cleveland fur., local del. | 17.00 |
| Philadelphia, delivered | 17.26 to 17.76 |
| Virginia, furnace | 17.75 |
| Granite City, Ill., fur. | 17.50 |
| Buffalo, fur., local del. | 17.50 |
| Buffalo, del. Boston | 21.41 to 21.91 |
| Buff., all-rail, Brooklyn | 19.91 to 20.91 |
| Buff., all-rail Newark | 18.28 to 18.78 |
| Ala., Bir. fur., local del. | 12.00 to 13.00 |
| Alabama, del. Chicago | 17.01 |
| Alabama, del. St. Louis | 15.42 |
| Alabama, del. Cincinnati | 14.69 to 15.19 |
| Ala., Phila., dock del. | 16.25 |
| Ala., Balt., dock del. | 16.00 |
| Alabama, New York dock | 16.50 |
| Ala., Boston dock del. | 16.75 |
| Tenn., Bir. base, local del | 13.00 |
| Tennessee, del. Cinn. | 14.69 to 15.19 |
| Montreal, delivered | 23.50 |
| Toronto, delivered | 22.10 |

**FOUNDRY, NO. 2X**

| | |
|---|---|
| Buffalo, fur., local del. | 18.00 |
| Buff., all-rail, Brooklyn | 20.91 to 21.41 |
| Buffalo, all-rail Newark | 18.78 to 19.28 |
| Buffalo, del. Boston | 21.91 to 22.41 |
| Virginia furnace | 18.25 |
| Eastern, del. Phila. | 17.76 to 18.26 |

**FOUNDRY, NO. 1X**

| | |
|---|---|
| Buffalo fur., local del. | 19.00 |
| Eastern, del. Phila. | 18.26 to 18.76 |

**MALLEABLE**

| | |
|---|---|
| Valley furnace | 17.00 |
| Cleveland fur., local del. | 17.00 |
| Pittsburgh dist. fur. | 17.50 |
| Pittsburgh, delivered | 18.13 to 18.63 |
| Chicago, furnace | 17.50 |
| Buffalo fur., local del. | 18.00 |
| Eastern Penna., delivered | 18.26 to 20.91 |
| Granite City, Ill., fur. | 17.50 |
| Montreal, delivered | 24.00 |
| Toronto, delivered | 22.60 |

**BASIC**

| | |
|---|---|
| Pittsburgh, district fur. | 17.50 |
| Pittsburgh, delivered | 18.13 to 18.63 |
| Eastern Penn., del. | 17.25 |
| Buffalo fur., local del. | 17.00 |
| Montreal, delivered | 20.50 |
| Valley, furnace | 17.00 |

**BESSEMER**

| | |
|---|---|
| Valley furnace | 17.00 |
| Pittsburgh, delivered | 18.13 to 18.63 |
| Pittsburgh, furnace | 17.50 |

**LOW PHOS.**

| | |
|---|---|
| Valley fur., standard | 27.00 |
| Philadelphia, standard | 24.76 to 27.79 |
| Copper-bear., E. Pa. fur. | 22.50 to 23.00 |

**GRAY FORGE**

| | |
|---|---|
| Valley furnace | 16.50 |
| Pittsburgh district fur. | 17.00 |
| Pittsburgh, delivered | 17.63 to 18.13 |

**CHARCOAL**

| | |
|---|---|
| Lake Superior, del. Chi. | 27.04 |

**SILVERY**

Jackson County, O., fur., in per cents 6—$21; 7—$21.50; 8—$22; 9—$22.50; 10—$23; 11—$24; 12—$25; 13—$27.

**BESSEMER FERROSILICON**

Jackson County, O., fur., in per cents 10—$25; 11—$26; 12—$27; 13—$29; 14—$31; 15—$26; 16—$35.

## Coke

**Prices Per Net Tons**

**Beehive Ovens**

| | |
|---|---|
| Connellsville furnace | $2.50 |
| Connellsville foundry | 3.25 to 4.75 |
| New River foundry | 6.00 |
| Wise county foundry | 4.25 to 5.00 |
| Wise county furnace | 3.50 to 4.25 |

**By-Product Foundry**

| | |
|---|---|
| Newark, N. J., del. | 9.00 to 9.40 |
| Chicago ovens | 8.00 |
| New England, del. | 11.00 |
| St. Louis, del. | 9.00 |
| Birmingham, ovens | 5.00 |
| Indianapolis, del. | 8.25 |
| Ashland, Ky., ovens, Connell., basis | 5.50 |
| Portsmouth, O., ovens, Connell., basis | 5.50 |
| Buffalo, ovens | 8.00 to 8.50 |
| Detroit, ovens | 8.50 |
| Philadelphia, del. | 9.00 |

## Iron Ore

**LAKE SUPERIOR ORE**

**Gross ton, 51½%, Lower Lake Ports**

| | |
|---|---|
| Old range bessemer | $4.80 |
| Mesabi bessemer | 4.65 |
| Old range nonbessemer | 4.65 |
| Mesabi nonbessemer | 4.50 |
| High phosphorus | 4.40 |

**EASTERN LOCAL ORES**

**Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces**

| | |
|---|---|
| Foundry and basic, 56-63%, contract | 10.00 |
| Copper-free low phos. 58-65% | nom. |

**FOREIGN ORE**

**Cents per units, alongside docks Atlantic ports**

| | |
|---|---|
| Foreign manganiferous ore, 45-55% iron, 6-10% manganese | 10.00 |
| North African low phosphorus | 9.00 |
| Swedish basic, 65% | 9.00 |
| Swedish low phos. | 10.00 |
| Spanish, North African basic, 50 to 60% | 9.00 |
| Newfoundland fdy., 55% | 9.00 |
| Tungsten, spot and future short ton unit, duty paid | $11.00 to $11.50 |
| Chrome ore, 48% net ton c.i.f. | $21.50 to 22.00 |

## Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

| | |
|---|---|
| Caucasian, 52-55% (nom.) | 26 to 28 cents |
| South African, 52% | 26 to 28 cents |
| South African, 49-51% | 25 to 26 cents |
| South African, 44-47% | 24 cents |
| Indian, 48-50% | nom. |
| Brazilian, 46-48% (nom.) | 22 cents |

## Refractories

**FIRE CLAY BRICK**

**Per 1000 f.o.b. Works**

**First Quality**

| | |
|---|---|
| Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland | $40.00 |
| Georgia, Alabama | 40.00 |

**Second Quality**

| | |
|---|---|
| Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland | 35.00 |
| Georgia, Alabama | 30.00 to 35.00 |

**SILICA BRICK**

| | |
|---|---|
| Pennsylvania | 40.00 |
| Joliet, Ill., East Chicago, Ind. | 49.00 |
| Birmingham, Ala. | 50.00 |

**MAGNESITE BRICK**

**Per Net Ton**

| | |
|---|---|
| 9 x 4½ x 2½ | $65.00 |

**MAGNESITE**

| | |
|---|---|
| Dead burned grain, net ton, Chester, Pa., or Baltimore bases | 40.00 |
| Domes, Chewelah, Wash., base | 22.00 |

**CHROME BRICK**

| | |
|---|---|
| Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½ | 45.00 |

## Semifinished Steel

**PRICES PER GROSS TON**

**BILLETS AND BLOOMS**

**4 x 4-inch base**

| | |
|---|---|
| Pittsburgh, open-hearth | $30.00 |
| Pittsburgh, bessemer | 30.00 |
| Youngstown | 30.00 |
| Cleveland | 30.00 |
| Philadelphia | 35.30 |
| Chicago | 31.00 |
| Forging, Chicago | 36.00 |
| Forging, Pittsburgh | 36.00 |
| Forging, Philadelphia | 40.30 |

**SHEET BARS**

| | |
|---|---|
| Pittsburgh | 29.00 to 30.00 |
| Youngstown | 29.00 to 30.00 |
| Cleveland | 29.00 to 30.00 |
| Chicago | 31.00 |

**SLABS**

| | |
|---|---|
| Pittsburgh | 30.00 |
| Youngstown | 30.00 |
| Cleveland | 30.00 |

**WIRE RODS**

| | |
|---|---|
| Pittsburgh, Cleveland | 35.00 to 37.00 |
| Chicago | 38.00 |

**SKELP**

| | |
|---|---|
| All grades, Pittsburgh | 1.60c |

## Ferroalloys

**(In dollars, except Ferrochrome)**

| | |
|---|---|
| *Ferromanganese, 78-82%, tidewater, duty paid | $85.00 |
| *Ferromanganese, del. Pittsburgh | 89.79 |
| Spiegeleisen, 19-20%, domestic fur. spot† | 30.00 |
| Ferrosilicon, 50 per cent, freight all., c. l. | 83.50 |
| Do, less carload | 88.50 |
| Do, 75 per cent | 130.00 to 150.00 |
| Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., con., del. | 11.00 |
| Do, for spot delivery | 11.50 |
| Ferrotungsten, stand., lb. cont. | 1.10 to 1.15 |
| Ferrovanadium, 30-40 per cent, per lb., contained, on analysis | 3.15 to 3.65 |
| Ferro-carbon-titanium carload producers' plants, net ton | 150.00 |
| Do, one-ton to c. l. | 170.00 |
| Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent) | 91.00 |
| Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24% | 122.50 |

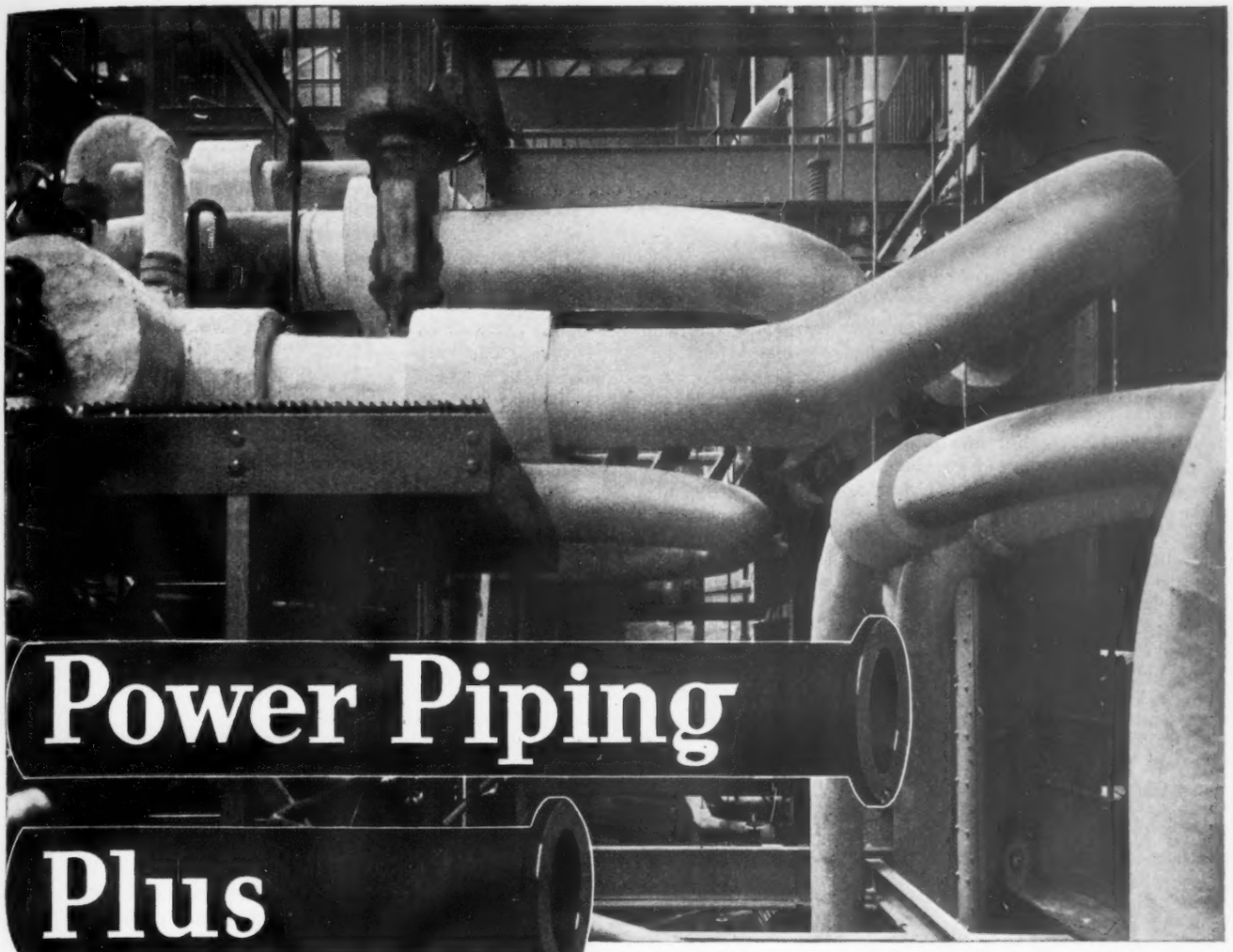
†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

## Fluorspar

**85 and 5 per cent grade**

| | |
|---|---|
| Washed gravel Kentucky and Illinois mines, per net ton | $13.50 to 14.00 |
| Washed gravel, import duty paid east, tide, gross ton | 19.00 |



# Power Piping Plus

CONTINUOUS, economical plant operation is not assured by the use of piping that merely measures up to your standard requirements. A surplus of pipe strength is essential for long service and for safety under heavy working pressures and high temperatures.

Pittsburgh Seamless Power Piping from solid billets of finest open-hearth steel—without welded seams or other weak spots—supplies that surplus strength . . . The ability of its tough, dense-grained steel to expand and contract uniformly at elevated temperatures and high pressures assures greater safety and longer life. Immediate shipment from large mill stocks in a wide range of sizes, lengths and strengths.

Division of Pittsburgh Steel Co.

**PITTSBURGH STEEL PRODUCTS COMPANY**

Pittsburgh New York Detroit Chicago St. Louis Tulsa Houston

**Pittsburgh Seamless Piping**

Sizes up to 14 inches O.D. Wall thickness up to 2 inches . . . Lengths to 40 feet and over. Made to A.S.M.E. Requirements, also A.S.T.M. A-106-29

# Pig Iron

**Further Curtailment in Production Indicated as Stocks Increase—Current Market Quiet**

PIG IRON PRICES, PAGE 68

**Pittsburgh**—Busines in the pig iron market has dwindled to small proportions and is well below the volume of shipments. April shipments have been fairly steady, comparing favorably with March, but new buying is lighter, and backlogs have been reduced. Some curtailment in production is in prospect as a result of recent poor demand. Prices are receiving little test but nominally are unchanged.

**Boston**—Sales of pig iron in New England in the past week amounted to 1200 tons, there being no sign of an early improvement in the melt. Small amounts of Indian iron was sold at $19 to $20, on dock, duty paid.

**New York**—With orders totaling only 3500 tons, pig iron buying is the lightest in several weeks. New inquiry is confined to small lots, with one lot of 1000 tons issued two weeks ago withdrawn. Buffalo iron is unchanged at $15 to $16, furnace, and southern is $16.50, delivered New York docks. The Port Henry blast furnace is scheduled to resume operations in May.

**Philadelphia**—Pig iron prices are easy, reflecting continued light buying. Eastern Pennsylvania furnaces are quoting No. 2 foundry $17.26 to $17.76, delivered, Philadelphia. The Washington navy yard will open bids May 5 on 225 tons of copper bearing, low phosphorus iron.

**Buffalo**—Several fair size orders have been booked for delivery by barge to New York and nearby points. New demand this week is small. Prices are unchanged.

**Youngstown, O.**—Small lots of foundry and malleable pig iron continue to move from blast furnaces to consumers. Ingot mold foundries adjacent to furnaces are taking molten metal for two weeks each month. No. 2 foundry, malleable, bessemer and basic hold at $17, valley furnace, while No. 3 and forge iron are $16.50.

**Cleveland**—Inquiries for pig iron are a little more numerous, several for 500 tons for consumers in western Ohio and Indiana being noted. The Westinghouse Electric & Mfg. Co. is in the market for an unstated amount for plants at Cleveland and Trafford City, Pa., covering last half requirements. The company purchased about 2000 tons for its Cleveland plant in the first half. Sales in the past week booked by furnace interests with headquarters at Cleveland dropped to approximately 10,000 tons. The lake furnace price for delivery in western Ohio and Indiana continues $16 to $17, base, and in Michigan $17 to $17.50. Cleveland furnaces hold to $17, base, for local delivery. The Hanna Furnace Co. will blow in the second of its two stacks at Detroit May 1.

**Cincinnati**—Total sales of pig iron during the past week were more than 4000 tons, due mainly to a 1000-ton order for northern iron by an Ohio melter, and a 1500-ton order for silvery by a Michigan user. Inquiries for 500 to 1000 tons of northern iron for an Ohio concern, and for 200 tons of malleable for an Indiana consumer are current.

**Chicago** — April shipments show only a slight gain over March, several malleable foundries being more active due to automotive and occasional railroad equipment orders. Buyers are able to obtain occasional carloads at 50 cents under the market, although there is little pressure against $17.50, base, Chicago furnace. A few carloads of southern iron have been closed at $11, base, Alabama furnace. Northern merchant furnace output may be reduced soon, but plans are indefinite.

**St. Louis**—Reduced operations at foundries is reflected in a slowing down of shipments. Buying is at a minimum, sales in the past week aggregating less than 2500 tons. Deliveries in this district in April are below those in March. The unusual spread between pig iron and scrap prices is leading melters to use more than the ordinary proportion of scrap.

**Birmingham, Ala.**—Demand for pig iron is less active than in recent weeks, as shown by a dearth of new orders and delay in shipping instructions on contracts. Prices are unchanged.

**Toronto, Ont.**—Melters continue buying on a small scale, for early delivery, the total for the week not exceeding 1000 tons. Prices are steady.

## Ferroalloys Reflect Lower Steel Operations.

Ferroalloy Prices, Page 68

**New York**—Specifications for ferromanganese continue to decline in volume, reflecting steelmaking operations. The market is unchanged at $85, duty paid, on carloads. Ferromanganese is being received from Yugoslavia, 500 tons through New Orleans, and 75 tons through Boston. Domestic spiegeleisen, 19 to 21 per cent, is holding nominally at $30, furnace, in carloads. There is little spot demand. Foreign spiegeleisen, 26 to 28 per cent, is nominal.

Shipments of special ferroalloys are light. Tungsten is at a standstill. Prices are steady.

**Pittsburgh**—Ferroalloy shipments have changed little in recent weeks, but are off slightly from the March rate. Prices continue $89.79, delivered, for small lots of ferromanganese, and $30, furnace, for spiegeleisen. Business in the spot market is light. Activity in other ferroalloys remains quiet with prices generally steady. Ferrotungsten is steady at $1.10 to $1.15.

## Canadian Steel and Iron Output Gains in March

Production of steel ingots and direct steel castings in Canada in March totaled 99,341 gross tons, registering the third consecutive monthly gain. The daily rate of March, 3205 tons, was 9 per cent in excess of the February rate of 2951 tons.

For the first quarter, output of steel ingots and castings was 239,576 gross tons, compared with 339,299 tons in the first quarter of 1930 and 370,863 tons in 1929.

Output of pig iron in Canada in March was 57,110 gross tons or 1842 tons per day. This is a gain of 11 per cent over the February rate of 1657 tons. The increase in March was mostly in basic iron.

First quarter output was 139,097 gross tons, compared with 232,261 tons a year ago. At the close of March four stacks were active in Canada: Algoma Steel Corp., Sault Ste. Marie, Ont., two; Steel Co. of Canada Ltd., Hamilton, Ont., and Dominion Iron & Steel Co., Sydney, N. S., one each.

Production of ferroalloys in March was 4526 tons, compared with 4006 tons in February. First quarter output was 12,999 tons against 17,043 tons in 1930.

## Dominion To Rebuild

Dominion Steel & Coal Corp., Sydney, N. S., is said to plan a bond issue of $10,000,000 for reconstruction of its plant, including three new 100-ton open-hearth steel furnaces and rebuilding of its rail and rod mills.

# Scrap

**Steady Decline Cuts 25 to 50 Cents from Active Grades—Melters Taking Little Tonnage**

**Chicago**—Slow shipments of scrap to glutted yards of leading melters, further reduced steelworks operations in the district, a large visible supply, and an offering by the St. Paul railroad, the heaviest railroad list in months, have brought scrap prices down still further. Reductions in consumer asking prices are 25 to 50 cents. Heavy melting steel has receded 25 cents to a range of $9.25 to $9.75. A small quantity was sold at the latter figure. Dealers are obtaining material at low prices, but are unable to book substantial futures even at reduced offers. Most of the scrap billed is absorbed without difficulty. Shipments are estimated at about 30 per cent. Melting steel on the Burlington list sold at $9.65 gross, delivered.

**Boston**—Only a few scattered car-

# Iron and Steel Scrap Prices

**Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.**

### HEAVY MELTING STEEL

| | |
|---|---|
| Birmingham | 9.00 to 10.50 |
| Boston, dealers | 6.00 to 6.25 |
| Buffalo, No. 1 | 10.50 to 11.00 |
| Buffalo, No. 2 | 9.00 to 9.50 |
| Chicago | 9.25 to 9.75 |
| Cinci., deal. | 8.75 to 9.25 |
| Cleve., No. 1 | 9.75 to 10.00 |
| Cleve., No. 2 | 9.25 to 9.50 |
| Det., No. 1 deal. | 8.25 to 8.75 |
| Det., No. 2 deal. | 7.00 to 7.50 |
| E. Pa. del. mill | 10.00 to 11.00 |
| N. Y. deal. R. R. | 6.50 to 7.00 |
| N. Y. deal. No. 2 | 5.00 |
| N. Y. deal. yd. | 5.00 |
| Pitts., No. 1 | 12.00 to 12.50 |
| St. L. No. 1 sel. | 8.75 to 9.25 |
| Federal, Ill. | 8.25 to 8.75 |
| Granite City, Ill. | 7.75 to 8.25 |
| Valleys, No. 1 | 11.25 to 11.75 |

### COMPRESSED SHEETS

| | |
|---|---|
| Buffalo, dealers | 9.00 to 9.50 |
| Chicago | 7.50 to 8.00 |
| Cleveland | 8.50 to 8.75 |
| Detroit, dealers | 8.25 to 8.75 |
| E. Pa. new mat. | 9.00 to 10.00 |
| Pittsburgh | 11.75 to 12.25 |
| Valleys | 10.75 to 11.25 |

### BUNDLED SHEETS

| | |
|---|---|
| Buffalo | 6.75 to 7.25 |
| Cinci., deal. | 8.25 to 8.75 |
| Cleveland | 7.00 to 7.25 |
| Eastern Pa. | 8.50 |
| Pittsburgh | 10.00 to 10.50 |
| St. Louis | 5.50 to 6.00 |

### SHEET CLIPPINGS LOOSE

| | |
|---|---|
| Chicago | 4.25 to 4.75 |
| Cincinnati | 4.75 to 5.25 |
| Detroit, dealers | 5.00 to 5.50 |
| St. Louis | 5.50 to 6.00 |

### STEEL RAILS SHORT

| | |
|---|---|
| Birmingham | 12.00 to 12.50 |
| Boston, dealers | 5.00 to 6.25 |
| Buffalo | 13.75 to 14.25 |
| Chicago (3 ft.) | 10.50 to 11.00 |
| Chicago (2 ft.) | 11.25 to 11.75 |
| Cinci., deal. | 13.75 to 14.25 |
| Detroit, deal. | 11.50 to 12.00 |
| Pitts. (open-hearth, 3 ft and less) | 14.50 to 15.00 |
| St. Louis | 12.00 to 12.50 |

### STOVE PLATE

| | |
|---|---|
| Birmingham | 8.00 to 8.25 |
| Boston, con. | 8.00 to 8.50 |
| Buffalo | 8.75 to 9.00 |
| Chicago, net | 7.00 to 7.50 |
| Cinci., deal. net | 5.25 to 5.75 |
| Det., net deal. | 5.75 to 6.25 |
| Eastern Pa. | 9.00 to 9.50 |
| N. Y., deal. mill | 4.75 |
| St. Louis | 7.00 to 7.50 |

### COUPLERS, SPRING

| | |
|---|---|
| Buffalo | 13.50 to 14.00 |
| Chicago | 10.50 to 11.00 |
| Eastern Pa. | 15.50 to 16.00 |
| Pittsburgh | 15.25 to 15.75 |
| St. Louis | 9.00 to 9.50 |

### ANGLE BARS—STEEL

| | |
|---|---|
| Chicago | 10.00 to 10.50 |
| St. Louis | 8.50 to 9.00 |

### LOW PHOSPHORUS

| | |
|---|---|
| Buff., billets and bloom crops | 15.00 to 15.50 |
| Cleveland bil. and bloom crops | 14.00 to 14.50 |
| Eastern Pa. | 15.50 to 16.00 |
| Pittsburgh billet bloom crops | 17.00 to 18.00 |
| Pitts. sheet bar crops | 16.50 to 17.00 |

### FROGS, SWITCHES

| | |
|---|---|
| Chicago | 9.75 to 10.25 |
| St. Louis | 9.00 to 9.50 |

### SHOVELING STEEL

| | |
|---|---|
| Chicago | 9.25 to 9.75 |
| Cleveland | 6.25 to 6.75 |
| St. Louis | 8.00 to 8.50 |

### RAILROAD WROUGHT

| | |
|---|---|
| Birmingham | 8.50 to 9.00 |
| Boston, dealers | 8.00 to 8.50 |
| Buffalo, No. 1 | 8.00 to 8.50 |
| Buffalo, No. 2 | 10.50 to 11.00 |
| Chicago, No. 1 | 8.50 to 8.95 |
| Chicago, No. 2 | 9.25 to 9.75 |
| Cinci., No. 2 | 8.75 to 9.25 |
| Eastern Pa. | 11.00 |
| N. Y., No. 1, deal. | 9.50 to 10.00 |
| Pitts., No. 2 | 12.00 to 12.50 |
| St. Louis, No. 1 | 6.50 to 7.00 |
| St. Louis, No. 2 | 8.25 to 8.75 |

### SPECIFICATION PIPE

| | |
|---|---|
| Boston | 5.60 to 6.10 |
| Eastern Pa. | 11.50 to 12.00 |
| N. Y., deal. | 6.50 to 7.25 |

### BUSHELING

| | |
|---|---|
| Buffalo, No. 1 | 9.00 to 9.50 |
| Chicago, No. 1 | 7.00 to 7.50 |
| Cinn., No. 1 dl. | 7.25 to 7.75 |
| Cinn., No. 2 | 4.25 to 4.75 |
| Cleve., No. 2 | 6.00 to 6.50 |
| Det., No. 1 new deal. | 6.75 to 7.25 |
| St. L., No. 1 | 6.00 to 6.50 |
| Val. new No. 1 | 10.00 to 10.50 |

### MACHINE TURNINGS

| | |
|---|---|
| Birmingham | 6.00 to 6.50 |
| Boston, dealers | 2.00 to 2.25 |
| Buffalo | 4.75 to 5.00 |
| Chicago | 4.25 to 4.75 |
| Cinn., deal. | 4.50 to 5.00 |
| Cleveland | 4.00 to 4.50 |
| Detroit | 3.00 to 3.50 |
| Eastern Pa. | 7.00 to 7.50 |
| N. Y., deal. | 3.00 |
| Pittsburgh | 7.00 to 7.50 |
| St. Louis | 4.00 to 4.50 |
| Valleys | 7.00 to 7.25 |

### BORINGS AND TURNINGS For Blast Furnace Use

| | |
|---|---|
| Boston | 2.00 to 2.50 |
| Buffalo | 5.50 to 6.00 |
| Cinn., deal. | 4.50 to 5.00 |
| Cleveland | 6.25 to 6.75 |
| Detroit, deal. | 3.50 to 4.00 |
| Eastern Pa. | 6.00 to 7.00 |
| N. Y., deal. | 3.00 |
| Pittsburgh | 7.50 to 8.00 |

### CAST IRON BORINGS

| | |
|---|---|
| Birming., chem. | 12.50 to 13.00 |
| Birming., plain | 6.00 to 6.50 |
| Boston, chem. | 9.10 to 9.60 |
| Boston, deal. | 2.00 to 2.50 |
| Buffalo | 5.50 to 6.00 |
| Chicago | 4.25 to 4.75 |
| Cinn., deal. | 4.50 to 5.00 |
| Cleveland | 6.25 to 6.75 |
| Detroit, deal. | 3.50 to 4.00 |
| Eastern Pa. | 6.50 to 7.00 |
| E. Pa., chem. | 13.50 to 14.50 |
| N. Y., deal. | 3.00 |
| Pittsburgh | 7.50 to 8.00 |
| St. Louis | 5.50 to 6.00 |

### PIPE AND FLUES

| | |
|---|---|
| Cinn., deal. | 7.50 to 8.00 |

### RAILROAD GRATE BARS

| | |
|---|---|
| Buffalo | 7.25 to 7.75 |
| Chicago, net | 6.25 to 6.75 |
| Cincinnati | 7.00 to 7.50 |
| Eastern Pa | 8.50 to 9.00 |
| N. Y., deal. | 5.00 to 5.50 |
| St. Louis | 6.00 to 6.50 |

### FORGE FLASHINGS

| | |
|---|---|
| Boston, deal | 5.00 to 5.25 |
| Buffalo | 9.00 to 9.50 |
| Cleve. ov. 10 in. | 7.25 to 7.75 |
| Detroit | 7.00 to 7.50 |

### FORGE SCRAP

| | |
|---|---|
| Boston, del. | 5.00 to 5.25 |
| Chicago | 12.00 to 12.50 |
| Eastern Pa. | 10.00 to 10.50 |

### ARCH BARS, TRANSOMS

| | |
|---|---|
| Chicago, net | 10.50 to 11.00 |
| St. Louis | 9.75 to 10.25 |

### AXLE TURNINGS

| | |
|---|---|
| Boston, deal. | 6.75 to 7.00 |
| Buffalo | 9.25 to 9.75 |
| Chi., steelworks | 7.50 to 8.00 |
| Cleveland | 8.00 to 8.50 |
| Eastern Pa. | 11.00 |
| Pittsburgh | 10.00 to 10.50 |
| St. Louis | 7.00 to 7.50 |

### STEEL CAR AXLES

| | |
|---|---|
| Birmingham | 13.50 to 14.00 |
| Boston, ship. pt. | 14.00 to 15.00 |
| Buffalo | 15.50 to 16.00 |
| Chicago | 13.70 to 14.30 |
| Eastern Pa. | 18.50 to 19.50 |
| St. Louis | 12.50 to 13.00 |

### SHAFTING

| | |
|---|---|
| Bos., ship. pt. | 13.00 to 13.50 |
| Chicago | 9.55 to 10.10 |
| N. Y., deal. | 13.00 to 14.00 |
| St. Louis | 10.25 to 10.75 |
| E. Penna. | 18.00 |

### CAR WHEELS

| | |
|---|---|
| Birming., iron | 10.00 to 10.50 |
| Boston, iron | 14.00 to 14.50 |
| Buffalo, iron | 12.00 to 12.50 |
| Buffalo, steel | 13.50 to 14.00 |
| Chicago, iron | 9.25 to 9.75 |
| Chi., roll steel | 11.50 to 12.00 |
| Cincinnati, iron | 10.50 to 11.00 |
| E. Pa. steel | 14.50 to 15.00 |
| E. Pa. iron | 13.00 to 13.50 |
| Pitts., iron | 13.00 to 13.50 |
| Pitts., steel | 15.25 to 15.75 |
| St. Louis, iron | 8.00 to 8.50 |
| St. Louis, steel | 10.50 to 11.00 |

### NO. 1 CAST SCRAP

| | |
|---|---|
| Birmingham | 10.00 to 10.50 |
| Buffalo (mach.) | 10.50 to 11.00 |
| Boston, textile | 10.00 to 10.50 |
| Chicago, mach. | 9.80 to 10.35 |
| Chi., railroad | 8.70 to 9.25 |
| Chicago, agri. | 8.40 to 8.95 |
| Cinn., mach. cup., gross | 13.00 to 13.50 |
| Cleve. cupola | 12.00 to 12.50 |
| Det., net deal. | 8.50 to 9.00 |
| E. Pa. cupola | 13.00 |
| N. Y. cup deal. | 8.00 to 8.50 |
| N. Y., del. local foundries | 12.00 |
| Pitts., cupola | 12.00 to 12.50 |
| San Fran., del. | 13.50 to 14.00 |
| Seattle | 8.50 to 9.00 |
| St. L. No. 1 ma. | 9.00 to 9.50 |
| St. L. No. 1 | 8.50 to 9.00 |

### HEAVY CAST

| | |
|---|---|
| Boston | 10.50 to 11.00 |
| Bos. mach. cast. | 11.50 to 12.50 |
| Buffalo, break | 7.50 to 8.00 |
| Cleve., break | 6.50 to 7.00 |
| Detroit, auto, net deal. | 10.50 to 11.00 |
| Det., break., dl. | 6.50 to 7.00 |
| Eastern Pa. | 11.00 |
| N. Y. No. 1 dl. | 8.00 to 8.50 |
| N. Y. break. dl. | 7.00 to 7.50 |
| Pittsburgh | 9.00 to 9.50 |

### MALLEABLE

| | |
|---|---|
| Boston R. R. | 13.00 to 13.50 |
| Buffalo | 11.50 to 12.00 |
| Chicago, agri. | 9.50 to 10.00 |
| Chicago, R. R. | 10.75 to 11.25 |
| Cinn., R. R. dl. | 11.50 to 12.00 |
| Cinn, agri., dl. | 12.00 to 12.50 |
| Cleveland, rail | 12.00 to 12.50 |
| Det. auto deal. | 10.50 to 11.00 |
| St. Louis, rail | 9.00 to 9.50 |

### RAILS FOR ROLLING 5 feet and over

| | |
|---|---|
| Birmingham | 10.25 to 10.75 |
| Boston | 8.50 to 9.00 |
| Buffalo | 10.75 to 11.25 |
| Chicago | 11.50 to 12.00 |
| Eastern Pa. | 13.00 to 13.50 |
| New York | 9.00 to 9.50 |
| St. Louis | 10.25 to 10.75 |

### LOCOMOTIVE TIRES

| | |
|---|---|
| Chicago, cut | 12.00 to 12.50 |
| St. L., No. 1 | 10.50 to 11.00 |

### LOW PHOS. PUNCHINGS

| | |
|---|---|
| Chicago | 11.25 to 11.75 |
| Buffalo | 14.00 to 14.50 |
| Eastern Pa. | 14.50 to 15.50 |
| Pittsburgh | 15.00 to 15.50 |

# Extra Cutting Economies

**At the Foundrymen's Convention**

Airco engineers expert in oxyacetylene practice in Foundries will be on hand in the Airco booth thruout the convention and will welcome your inquiries. A complete line of Air Reduction oxyacetylene products will be on hand.

Visit Oxyacetylene Headquarters
Airco Booth
— 262 —

The superior economy and convenience of the oxy-acetylene torch for cutting the heaviest sections of iron or steel, down to light sheet metal, are well known. Thousands of torches are at work daily in the production of steel shapes, cutting off risers of all sizes in the foundry, in scrapping operations, etc., etc.

An EXTRA ECONOMY is being realized by some of these thousands. It is due to the superior design and construction of Airco-Davis-Bournonville torches and their use with Airco 99.5% Pure Oxygen and Acetylene according to Airco Engineering standards.

EXTRA ECONOMY is of special interest these days. For details, write or telephone your nearest Airco Office listed.

## AIR REDUCTION SALES COMPANY

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Airco Oxygen—Airco Acetylene—Airco-Davis-Bournonville Welding & Cutting Apparatus—Supplies—National Carbide

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St. Louis
Wheeling
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lots of various scrap materials moved in this market the past week. Some dealers and brokers have received offers at prices so out of line with the low quotations they did not even consider them. On the other hand, prices are so low that sellers will not engage in bargaining.

**New York**—Movement of No. 1 heavy melting scrap to the Buffalo district by barge has been heavy and more than 10,000 tons have been shipped since the canal opening. Dealers buying prices for several grades are lower, with $6.50 having been paid for No. 1 railroad. Dealers' prices for specification pipe, railroad wrought, grate bars and car wheels are also weaker. Eastern Pennsylvania mills are taking scrap shipments close to requirements with $10, delivered, prevailing.

**Philadelphia**—A sale of 10,000 tons of No. 1 heavy melting steel to a Coatesville, Pa., consumer is a high light in an otherwise dull scrap market. While melting steel is unchanged several grades are lower. Low phosphorus items are off nominally 50 cents to $1.

**Buffalo**—Bethlehem is understood to have contracted for 5000 to 10,000 tons of scrap for delivery at Lackawanna. The prices are the same as those of previous contracts, $9.50 for No. 2 and $11 for No. 1. After making these purchases Bethlehem withdrew from the market and announced a 50-cent reduction in offers for both materials. Demand for borings and turnings has been reduced to practically nothing and nominal prices are lower.

**Pittsburgh**—Scrap activity continues low and buying is in small, scattered lots. Many prices represent nominal values. Railroad steel specialties and hand bundled sheets are easier, while blast furnace grades are slightly firmer on a sale at $8. The Pennsylvania railroad is offering 54,065 net tons of various grades on its May list.

**Cleveland**—One steelworks here is receiving a limited tonnage of iron and steel scrap this week. However, the material is being laid down in the mill's yard and the shippers will not be paid until it is consumed. The shipments are against scrap sold months ago and have had no strengthening effect on the market. Several grades are quoted lower, including short borings and turnings at $6.25 to $6.75; No. 2 busheling at $6 to $6.50 and machine shop turnings at $4 to $4.50. Movement to out-of-town consumers is further restricted this week. The valley scrap market remains exceptionally weak.

**Cincinnati**—Movement of iron and steel scrap continues to be light with the general market so dull as to provide no test for current quotations, considered merely nominal on several grades.

**Detroit**—Weakness is evident in all lines of steel and iron scrap, quotations on several grades being reduced 25 to 50 cents. Little opportunity remains for further decline but no sign of improvement has appeared.

**St. Louis**—The market for iron and steel scrap continues dull and downward. Additional price cuts affecting about a dozen items took place during the past several days. There is virtually no buying by melters, both mills and foundries being disposed to mark time. New business placed has not expanded and old orders are diminishing.

**Birmingham, Ala.**—Scrap prices are weak and melters are making offers for what little stock they are taking now. Heavy melting steel is above $10 for the better quality.

**Toronto, Ont.**—General business in iron and steel scrap shows little change from the previous week. Shipments of special grades of steel scrap are being made to the Hamilton district, but mills are confining purchases to small lots for spot delivery. Machinery cast is still in good demand and most new business is in this grade. Stove plate and malleable scrap are moving slowly while other grades are practically at a standstill. Prices are unchanged.

## Canadian Scrap

**Dealers' Buying Prices**

**MONTREAL**

**Per Gross Ton**

| | |
|---|---|
| Iron axles | $11.00 |
| Steel axles | 10.00 |
| Car wheels | 8.00 |
| Stove plate | 8.00 |
| Wrought pipe | 2.00 |
| Turnings | 2.00 |
| Heavy melting steel | 6.00 |

**TORONTO**

| | |
|---|---|
| Steel axles | 7.00 |
| Iron axles | 7.00 |
| Heavy melting steel | 7.00 |
| Turnings | 2.00 |
| No. 1 mach. cast (net) | 9.00 |
| Malleable (net) | 7.00 |

## Installs 4-High Mill

Supplementing facilities for producing stainless steel wire and rod, the Alloy Metal Wire Co., Moore, Pa. recently has installed a new 4-high mill for the production of cold-rolled strip in widths up to 16 inches and in thicknesses from ⅛ to 0.003-inch. Other recent improvements include the erection of a new building for housing additional furnace and pickling equipment.

# Coke

**Market for Furnace Coke Is Softer—Demand From Foundries Continues Downward**

COKE PRICES, PAGE 68

**Pittsburgh**—Beehive coke demand is dull. Foundry coke is moving slowly with little new business appearing. Spot furnace coke generally is $2.50, but occasional lots are going at less. Foundry coke demand is tending slightly downward, with prices unchanged.

**Boston**—The melt throughout New England continues at a low rate and contract shipments have been held back. Warm weather has checked demand for domestic grades.

**New York**—Profound dullness marks coke buying, with beehive furnace coke moving at a minimum of $2.25, Connellsville, Pa., and standard grades of beehive foundry coke at $3.25. Some sellers still are adhering to $2.50 to $2.65, Connellsville, for furnace, and $3.50 to $3.65 for foundry grades. By-product coke is $9 to $9.40, Newark, N. J.; $11, New England; and $9, Philadelphia.

**Cincinnati**—Specifications for by-product foundry coke show little variance from those in the first quarter. No change in the quotation of $9, delivered Cincinnati, is anticipated.

**Chicago**—By-product foundry coke shipments are off slightly, and about 50 per cent of oven capacity is engaged. The price remains $8, ovens.

**St. Louis**—The past week has witnessed a slowing down in specifications. Indications point to April deliveries showing a decrease under the March totals. Prices are steady.

**Birmingham, Ala.**—Coke consumption has fallen off slightly and production has followed a similar course, though the number of active ovens has not been reduced. Prices are steady.

# Pacific Coast

**Steel for Engineering Work Makes Most California Tonnage —Bids Asked on Steel for Golden Gate Bridge — Northwest Finds Slow Demand — Lower Water Rates Fail To Aid**

**San Francisco**—(*By Air Mail*)—Engineering construction work continues to take most of the steel moving on the Pacific Coast, while little improvement is noted in building operations. Among new inquiries are 103,000 tons of steel products for the Golden Gate bridge across San Francisco bay and 35,000 tons of plates for the Hetch Hetchy pipe line, San Francisco, bids on both projects having been called for.

### Bars, Plates and Shapes

Awards of reinforcing steel bars aggregated 640 tons. Unnamed companies took 254 tons for highway work in San Mateo County, Calif., and 100 tons for an open-air theater in Los Angeles. Bids will be opened May 6 for 255 tons for the Hetch Hetchy pipe line and May 13 for 112 tons for a bridge over the Santa Ana river in California. The largest pending project involves 4000 tons for the Sixth street bridge, Los Angeles, bids on which will be opened April 29. Out-of-stock prices in Los Angeles and San Francisco are 2.50c, and 2.60c, base, on carload lots, respectively.

Bids will be opened May 6 for 35,000 tons of plates for a 60-inch welded steel pipe line for the Hetch Hetchy project. The Western Pipe & Steel Co. booked 585 tons for a 40-inch welded steel pipe line for Los Angeles and was low bidder on 840 tons for a welded pipe line for San Francisco. The Honolulu Iron Works placed 200 tons of 30-inch welded steel pipe with the Montague Pipe & Steel Co. Prices continue to range between 2.00c and 2.05c, c.i.f.

Shape awards were the largest in over four weeks and aggregated 1537 tons. Moore Drydock Co. took 500 tons for Pier No. 15, San Francisco. An overhead crossing near Merced, Calif., involving 525 tons of shapes and 100 tons of H columns was placed with the Pacific Coast Engineering Co. and the Pacific Coast Steel Corp., respectively. The Western Iron Works booked 167 tons for an apartment in San Francisco and the Palm Iron Works took 110 tons for a hangar in Sacramento, Calif. Bids will be opened June 17 on 75,000 tons of shapes and 28,000 tons of steel cables for the Golden Gate bridge. Prices remain unchanged at 2.05c to 2.15c, c.i.f.

### Other Finished Material

Little improvement is noted in demand for sheets and no important inquiries have been in the market lately. Prices continue unchanged at 2.50c, base, c.i.f. on blue annealed sheets; 3.00c on black sheets No. 24 gage and 3.50c, c.i.f. on galvanized sheets No. 24 gage.

Awards of cast iron pipe were confined to lots of less than 100 tons. Pending business includes 2896 tons for Los Angeles, bids on which have been opened.

## Coast Pig Iron Prices

| | |
|---|---|
| Utah basic | $22 00 to 24.00 |
| Utah foundry | 22.00 to 24.00 |
| *German | 24.25 |
| *Indian | 22.00 to 24.00 |

*C.i.f. duty paid.

## Spring Pickup Is Delayed

**Seattle**—Normal spring pickup is lacking in Pacific Northwest iron and steel trades. Buying is confined to small tonnages for quick delivery. Restriction of logging, lumbering and fishing is adversely affecting all lines of steel activity from foundries to fabricating plants and jobbers. New projects are developing slowly and hesitation is noted in decisions on pending business.

Awards this week approximated 1600 tons. Prices remain steady at present unusually low levels. Price reductions in cast iron pipe reflect keen competition. French makers have again been successful in closing some desirable contracts in this territory.

Additional reductions in westbound water freight rates on iron and steel from North Atlantic to Pacific Coast ports have been made by some intercoastal lines. Class A steamers cut from 25.00c to 22½c per 100 pounds while one of the latter group announced a rate of 20.00c, which is regarded as probably a record low on this route. These cuts have not stimulated the movement of steel products, which are not being booked in normal volume.

### Bars, Plates and Shapes

Sales of both merchant and concrete bars are inactive. Demand is poor and few new specifications are up for figures. Local mills report some business in car lot tonnages but large projects are lacking. Two small awards were let this week, 105 tons for state highway work in Snohomish county, Wash., to Northwest Steel Rolling Mills, Seattle, while 100 tons for the Twisp bridge, Okanogan county, went to an unnamed interest through Triangle Construction Co., Spokane, general contractor. O. F. Larson & Son will build a 175-foot concrete chimney at the Puget Sound navy yard, calling for a small tonnage of concrete steel. Bids for 15 Montana highway projects, to be opened April 29, involve a total of only 130 tons of structurals and reinforcing.

Plans are reported about to be realized for the $325,000 Albro Place viaduct, Seattle, calling for an unstated tonnage of steel. Bids to be opened for Oregon highway construction April 30 include three concrete bridges in Malheur, Douglas and Polk counties.

Projects involving large tonnages of plates are entirely lacking in the Pacific Northwest and no new steel pipe jobs have developed. The Cle Elum government job dam, Washington, bids about June 15, calls for a quantity of 34-inch steel pipe.

Local fabricating plants are booking a few small orders but business in excess of 100 tons is the exception. Several projects involving fairly large tonnages are in prospect but are not up for immediate action. Bids will be opened June 3 for a 250-ton stationary hammerhead crane, one 20-ton traveling tower crane and one 10-ton traveling gantry crane. Snohomish county, Wash., commissioners will open bids May 11 for a steel span to cross the Pilchuck river, tonnage unstated.

### Pipe Buying Is Small

Some business is being done out of stock in small lots, competing interests being inclined to cut prices to get orders. French interests have booked 1443 tons of cast iron pipe for Seattle and Tacoma. For the former 843 tons of 20 and 24-inch are involved in the eighth avenue S. W. improvement. The Yakima avenue job, Tacoma, calls for 600 tons of 18-inch cast iron pipe. Portland will receive bids April 30 for furnishing 3600 feet of 8-inch lap welded pipe and couplings.

# Steel, Wrought and Cast Iron Pipe, and Tubing

## Welded Iron, Steel Pipe

**Base Price $200 Ton**

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought iron pipe, Pittsburgh base.

**BUTT WELD**

| | Steel | | | Iron | |
|---|---|---|---|---|---|
| In | Blk. | Gal. | In. | Blk | Gal. |
| ⅛ | 58 | 44½ | ⅛ | 23 | 5 |
| ¼ | 62 | 50½ | ¼ | 28 | 11 |
| ⅜—3 | 64 | 52½ | ⅜ and 1¼ | 31 | 15 |
| | | | 1½ and 2 | 35 | 18 |

**LAP WELD**

| | | | | |
|---|---|---|---|---|
| 2 | 57 | 45½ | 2 | 23 | 9 |
| 2½—6 | 61 | 49½ | 2½—3½ | 28 | 13 |
| 7—8 | 58 | 45½ | 4—6 | 30 | 17 |
| 9—10 | 56 | 43½ | 7 and 8 | 29 | 16 |
| 11—12 | 55 | 42½ | 9—12 | 26 | 11 |

**BUTT WELD**

*Extra strong, plain ends*

| | | | | |
|---|---|---|---|---|
| ⅛ | 55 | 44½ | ¼ & ⅜ | +13 | +48 |
| ¼ | 60 | 49½ | ½ | 23 | 7 |
| ⅜—1½ | 62 | 51½ | ¾ | 28 | 12 |
| 2—3 | 63 | 52½ | 1—2 | 34 | 18 |

**LAP WELD**

*Extra strong, plain ends*

| | | | | |
|---|---|---|---|---|
| 2 | 55 | 44½ | 2 | 29 | 13 |
| 2½—4 | 59 | 48½ | 2½—4 | 34 | 20 |
| 4½—6 | 58 | 47½ | 4½—6 | 33 | 19 |
| 7—8 | 54 | 41½ | 7 and 8 | 31 | 17 |
| 9—10 | 47 | 34½ | 9—12 | 21 | 8 |
| 11—12 | 46 | 33½ | | | |

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

**BOILER TUBES**

| Carload Discounts, Lap Welded Steel | | f.o.b. Pittsburgh Charcoal Iron | |
|---|---|---|---|
| 2—2¼ | 38 | 1¾ | 8 |
| 2½—2¾ | 46 | 2—2¼ | 13 |
| 3 | 52 | 2½—2¾ | 16 |
| 3¼—3¾ | 54 | 3 | 17 |
| 4 | 57 | 3¼—3½ | 18 |
| 4½—6 | 46 | 4 | 20 |
| 1½ | 1 | 4½ | 21 |

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

**STANDARD COMMERCIAL SEAMLESS BOILER TUBES**

**COLD DRAWN**

| | | | |
|---|---|---|---|
| 1 | 61 | 3 | 46 |
| 1¼—1½ | 53 | 3¼—3½ | 48 |
| 1¾ | 37 | 4 | 51 |
| 2—2¼ | 32 | 4½, 5, 6 | 40 |
| 2½—2¾ | 40 | | |

**HOT ROLLED**

| | | | |
|---|---|---|---|
| 2—2¼ | 38 | 3¼—3½ | 54 |
| 2½—2¾ | 46 | 4 | 57 |
| 3 | 52 | 4½, 5, 6 | 46 |

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

## Seamless Tubing

**Cold drawn; f.o.b. mill**

Random lengths over 5 ft. .....55%
Selected lengths, 1 to 18 ft. .....53%

## Cast Iron Water Pipe

**Class B Pipe—Per Net Ton**

Six-inch and over, Bir. ....$35.00 to 36.00
Four-inch, Birmingham .... 39.00 to 40.00
Four-inch, Chicago ..... 46.00 to 48.00
Six to 24-inch, Chicago..... 42.00 to 44.00
Six-inch and over, N. Y..... 37.50 to 39.50
Four-inch, New York..... 40.50 to 41.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

# Warehouse Quotations at Leading Centers, in Cents Per Pound

**STEEL BARS**

| | |
|---|---|
| Baltimore ..... | 3.00c |
| Boston ..... | 3.265c |
| Buffalo ..... | 3.15c |
| Chattanooga.. | 3.10c |
| Chicago ..... | 2.90c |
| Cincinnati .... | 3.15c |
| Cleveland ..... | 2.85c |
| Detroit ..... | 3.00c |
| Houston ..... | 3.00c |
| Los Ang. .... | 3.40c |
| New York‡(d) | 3.10c |
| Philadelphia.. | 2.60c |
| Pittsburgh .... | 2.75c |
| Portland ..... | 3.15c |
| San Frans..... | 2.40c |
| Seattle ..... | 3.15c |
| St. Louis ..... | 3.15c |
| St. Paul ..... | 3.00c |
| Tulsa ..... | 3.65c |

**IRON BARS**

| | |
|---|---|
| Baltimore .... | 3.25c |
| Boston ..... | 3.265c |
| Buffalo ..... | 3.15c |
| Chattanooga.. | 3.10c |
| Chicago ..... | 3.00c |
| Cincinnati .... | 3.15c |
| Detroit ..... | 3.00c |
| New York‡(d) | 3.10c |
| Philadelphia.. | 2.60c |
| St. Louis ..... | 3.15c |
| Tulsa ..... | 3.65c |

**REINFORC. BARS**

| | |
|---|---|
| Baltimore....2.50c- | 3.31c |
| Boston ..... | 3.265c |
| Buffalo ..... | 2.95c |
| Chattanooga.. | 3.10c |
| Cincinnati .... | 3.15c |
| Cleveland ..2.25c- | 2.44c |
| Detroit ..... | 3.00c |
| Houston ..... | 3.00c |
| Los Ang. cl.... | 2.40c |
| Los Ang. lcl.. | 2.70c |
| New York..2.65c- | 3.10c |
| Phila. .....2.40c- | 3.00c |
| Pittsburgh .... | 2.75c |
| San Fran. cl. | 2.30c |
| San Fran. lcl. | 2.50c |
| Seattle ..... | 3.15c |
| St. Louis ..... | 3.15c |
| Tulsa ..... | 3.65c |
| Young. .....2.30c- | 2.60c |

**SHAPES**

| | |
|---|---|
| Baltimore .... | 3.00c |
| Boston ..... | 3.365c |
| Buffalo ..... | 3.25c |
| Chattanooga.. | 3.20c |
| Chicago ..... | 3.00c |
| Cincinnati .... | 3.25c |
| Cleveland ..... | 2.95c |
| Detroit ..... | 3.10c |
| Houston ..... | 3.25c |
| Los Ang. .... | 3.40c |
| New York(d) | 3.10c |
| Philadelphia.. | 2.50c |
| Pittsburgh .... | 2.85c |
| Portland ..... | 3.15c |
| San Fran. .... | 2.40c |
| Seattle ..... | 3.15c |
| St. Louis ..... | 3.25c |
| St. Paul ..... | 3.10c |
| Tulsa ..... | 3.75c |

**PLATES**

| | |
|---|---|
| Baltimore .... | 3.00c |
| Boston ..... | 3.365c |
| Buffalo ..... | 3.25c |
| Chattanooga.. | 3.20c |
| Chicago ..... | 3.00c |
| Cincinnati .... | 3.25c |
| Cleveland, ¼-in. and thicker ..... | 2.95c |
| Clev., 3/16-in. | 3.20c |
| Detroit ..... | 3.10c |
| Det., 3/16-in. | 3.10c |
| Houston ..... | 3.00c |
| Los Angeles.. | 3.40c |
| New York(d) | 3.30c |
| Philadelphia.. | 2.50c |
| Phila. floor.... | 5.10c |
| Pittsburgh .... | 2.85c |
| Portland ..... | 3.15c |
| San Fran. .... | 2.40c |
| Seattle ..... | 3.15c |
| St. Louis ..... | 3.25c |
| St. Paul ..... | 3.10c |
| Tulsa ..... | 2.75c |

**NO. 10 BLUE**

| | |
|---|---|
| Baltimore ..... | 3.25c |
| Boston ..... | 3.915c |
| Buffalo ..... | 3.50c |
| Chattanooga.. | 3.60c |
| Chicago ..... | 3.35c |
| Cincinnati .... | 3.45c |
| Cleveland ..... | 3.10c |
| Detroit ..... | 3.35c |
| Houston ..... | 3.90c |
| Los Ang. ..... | 3.95c |
| N. Y. (d)....3.00c- | 3.40c |
| Portland ..... | 4.00c |
| Phila.*† ..... | 3.05c |
| Pitts.** ..... | 3.10c |
| San Fran. .... | 3.65c |
| Seattle ..... | 4.00c |
| St. Louis .... | 3.45c |
| St. Paul ..... | 3.40c |
| Tulsa ..... | 3.95c |

**NO. 24 BLACK**

| | |
|---|---|
| Balt.*† ..... | 3.50c |
| Boston ..... | 4.70c |
| Buffalo ..... | 4.20c |
| Chicago ..... | 3.80c |
| Cincinnati .... | 3.90c |
| Clev.*** ..... | 3.75c |
| Detroit ..... | 3.75c |
| Los Ang. .... | 4.70c |
| New York..3.50c- | 3.65c |
| Phila.*† ..... | 3.60c |
| Pitts.** .. 3.35c to | 3.40c |
| Portland ..... | 4.50c |
| San Fran. .... | 4.15c |
| Seattle ..... | 4.50c |
| St. Louis ..... | 3.95c |
| St. Paul ..... | 3.545c |
| Tulsa ..... | 4.10c |

**NO. 24 GAL. SHEETS**

| | |
|---|---|
| Balt.*† ..... | 4.00c |
| Boston ..... | 5.45c |
| Buffalo .....4.40c- | 4.60c |
| Chicago (local del.) | 4.35c |
| Chicago (outside) | 4.35c-4.60c |
| Cincinnati .... | 4.40c |
| Cleveland ..... | 4.00c |
| Detroit ..... | 4.25c |
| Houston ..... | 5.40c |
| Los Ang. .... | 5.10c |
| New York....4.00c- | 4.10c |
| Phila.*† ..... | 4.15c |
| Pitts.** .. 3.90c to | 4.00c |
| Portland ..... | 5.00c |
| San Fran. .... | 4.65c |
| Seattle ..... | 5.00c |
| St. Louis ..... | 4.40c |
| St. Paul ..... | 4.23c |
| Tulsa .....4.60c- | 4.75c |

**BANDS**

| | |
|---|---|
| Baltimore .... | 3.50c |
| Boston .....4.015c- | 5.00c |
| Buffalo ..... | 3.50c |
| Chattanooga.. | 3.30c |
| Chicago ..... | 3.10c |
| Cincinnati .... | 3.35c |
| Cleveland ..... | 3.10c |
| Det. 3/16-in. & lighter.... | 3.30c |
| Houston ..... | 3.65c |
| Los Ang. ..... | 4.30c |
| New York(d) | 3.40c |
| Philadelphia.. | 2.90c |
| Pittsburgh .... | 3.10c |
| Portland ..... | 3.50c |
| San Fran. .... | 3.75c |
| Seattle ..... | 4.15c |
| St. Paul ..... | 3.75c |
| Tulsa ..... | 3.85c |

**HOOPS**

| | |
|---|---|
| Baltimore .... | 3.50c |
| Boston .....5.50c- | 6.00c |
| Buffalo ..... | 3.90c |
| Chicago ..... | 3.65c |
| Cincinnati .... | 3.90c |
| Cleveland ..... | 3.65c |
| Det. No. 14 & lighter .. | 3.80c |
| New York .... | 3.75c |
| Philadelphia.. | 3.15c |
| Pittsburgh .... | 4.10c |
| Seattle ..... | 5.15c |
| St. Paul ..... | 3.75c |

**COLD FIN. STEEL**

**Rounds & Hexagons**

| | |
|---|---|
| Baltimore (c) | 3.30c |
| Boston ..... | 3.50c |
| Buffalo ..... | 3.15c |
| Chattanooga* | 3.85c |
| Chicago ..... | 3.35c |
| Cincinnati .... | 3.80c |
| Cleveland ..... | 3.40c |
| Detroit ..... | 3.65c |
| Los Ang. (a) | 4.50c |
| New York .... | 3.40c |
| Philadelphia* | 3.40c |
| Pittsburgh .... | 3.35c |
| Portland (a) | 4.50c |
| San Fran.(a) | 4.25c |
| Seattle (a).... | 4.75c |
| St. Paul (a).. | 3.85c |
| St. Louis ..... | 3.60c |
| Tulsa ..... | 4.75c |

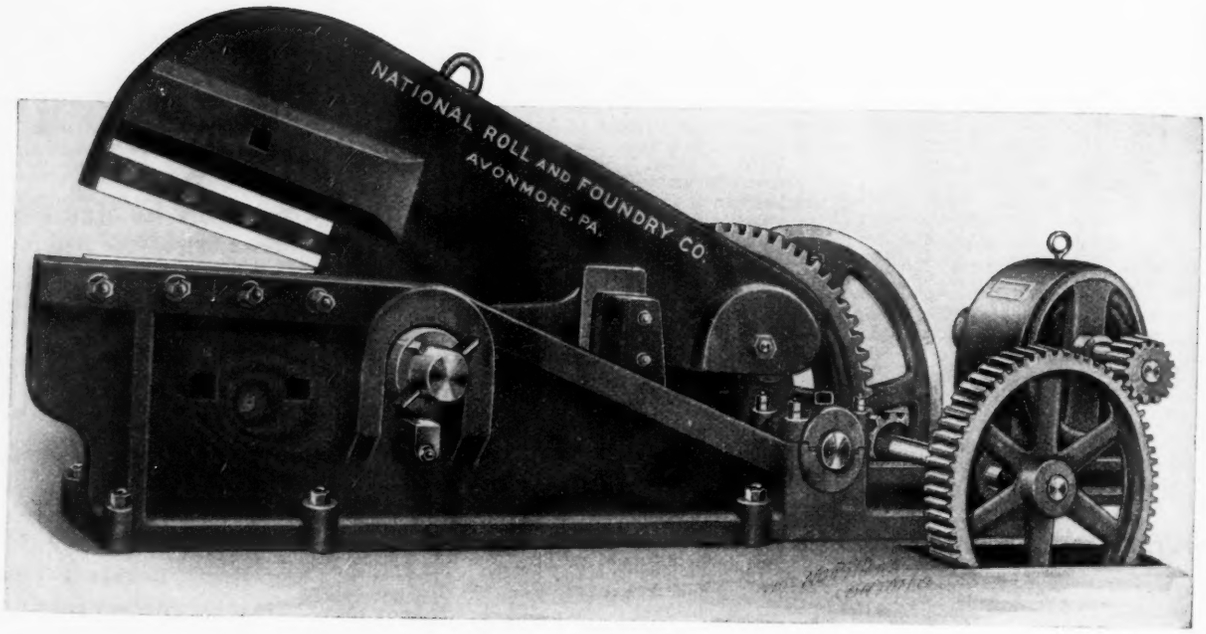
Flats and squares 5½c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

**COLD ROLL. STRIP**

| | |
|---|---|
| Boston 0.100 in., 500 lb. lots ..... | 5.30c |
| Buffalo ..... | 5.65c |
| Chicago (soft) (b).. | 6.15c |
| Cincinnati .... | 6.10c |
| Clev. (b) ..... | 5.95c |
| Detroit ..... | 5.40c |
| Phila. (c)..... | 4.85c |
| New York .... | 5.05c |

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
‡Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.

# "NATIONAL" ROLL




## SPECIAL HIGH KNIFE SCRAP SHEARS AND ROLLING MILL MACHINERY

PLAIN CHILLED ROLLS
SPECIAL CHILLED ROLLS
COLD ROLLS
SAND ROLLS

# ROLLS

EXTRA HARD ROLLS
FOR
BRASS
COPPER
ALUMINUM

**THE NATIONAL ROLL & FOUNDRY COMPANY**
**Office and Works: AVONMORE, PA., U.S.A.**

## Mill Products

**Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass product prices based on 10.00c, Conn., for copper**

| | |
|---|---|
| **Sheets** | |
| Yellow brass (high) | 17.25 |
| Copper, hot rolled | 19.87½ |
| Lead, full sheets (cut ½c more) | 8.25 |
| Zinc sheet (100-lb. base) | 8.75 |
| **Tubes and Pipes** | |
| Seamless yellow brass (high) | 22.12½ |
| Seamless copper | 22.37½ |
| **Rods** | |
| Yellow brass (high, full turnings) | 15.50 |
| Naval brass | 16.50 |
| **Anodes** | |
| Copper, untrimmed | 17.37½ |
| **Wire** | |
| Yellow brass (high) | 17.75 |

## Old Metals

**Dealers' buying prices, cents lb.**

| | | |
|---|---|---|
| **Heavy Red Brass** | | |
| New York | 6.25 to | 6.50 |
| Chicago | 5.50 to | 6.00 |
| Cleveland | 6.00 to | 6.50 |
| St. Louis | 6.25 to | 6.50 |
| **Heavy Yellow Brass** | | |
| New York | 4.25 to | 4.50 |
| **Heavy Copper and Wire** | | |
| New York | 7.25 to | 7.50 |
| Boston | 7.00 to | 7.25 |
| Chicago | 6.75 to | 7.25 |
| Cleveland | 6.50 to | 6.75 |
| St. Louis | 6.50 to | 7.00 |
| **Red Brass Borings** | | |
| New York | 6.25 to | 6.50 |
| **Yellow Brass Tubing** | | |
| Cleveland | 3.75 to | 4.00 |
| **Light Copper** | | |
| New York | 6.50 to | 6.75 |
| Chicago | 5.75 to | 6.00 |
| Cleveland | 5.75 to | 6.00 |
| St. Louis | | 6.50 |
| **Light Brass** | | |
| Boston | 3.00 to | 3.25 |
| Chicago | 3.00 to | 3.25 |
| Cleveland | 2.75 to | 3.00 |
| St. Louis | 3.50 to | 3.75 |
| **Zinc** | | |
| New York | 1.25 to | 1.50 |
| Cleveland | 1.25 to | 1.50 |
| St. Louis | | 2.00 |
| **Aluminum** | | |
| Clippings, soft, Cleveland | 12.00 to | 13.00 |
| Clippings, hard Cleveland | 9.50 to | 10.00 |
| Borings, Cleveland | 4.50 to | 5.00 |
| Mixed cast, Cleveland | 5.00 to | 5.50 |
| Mixed cast, Boston | 4.00 to | 4.50 |
| Mixed cast, St. Louis | | 4.50 |

## Secondary Metals

| | |
|---|---|
| Remelt aluminum No. 12 | 10.50 |
| Brass ingots, 85-5-5-5 | 9.12½ |

# Metals

**Prices Decline Further While New Demand Continues to Lag —Stock Market Is a Factor**

**New York**—Nonferrous metals, under the influence of light demand and break in the stock market, have fallen to extremely low prices. On several previous occasions since depressions set in, low prices have attracted buyers on the "bargain" theory. At such time prices have not been as low as at present on most metals, and yet the new low prices have attracted little business. Buyers seem to be disinterested, irrespective of price.

Tin is an exception, as when the market broke below 24.00c on Monday, within a small fraction of its low point of last December, buyers came into the market for good quantities. On the other hand, lead and zinc have gone well below their previous bottom prices, but business continues confined to scattered carlots as in the past few weeks.

**Copper**—The price situation has remained practically unchanged in the past week. One or two custom smelters have quoted 9.50c, Connecticut, while other asking prices have been at 9.75c to 10.00c. The higher figures represent no domestic business, while a little export trading is being done at 10.05c, c.i.f., equivalent to 9.75c, Connecticut. Several leading independents have cut prices on copper and brass products to a basis of 9.50c for virgin copper.

**Zinc**—Prime western has been dropping 2½ to 5 points a day since the first week of April. At no point in this break to the lowest prices since the hard times of the '90s has buying been worth while, nor has the market shown much resistance. In the past day or two the market has been extremely uncertain, with rumors regarded as important. Buyers and sellers have hesitated to make definite statements about prices. The London market also has been going to new low levels.

**Tin**—New business has been extremely light but on Monday the low prices were a stimulus. Stocks of tin continue to accumulate in England, and shipments from the Straits also are good size. Consumption in this country has improved more in tin than in other metals, but consumers have had large inventories.

**Lead**—The price was cut three-times in the past week, with demand light.

**Aluminum**—New business is quiet, but prices of virgin metal are steady.

## Coke By-Products Firmer, With Output Curtailed

**New York**—Output of coke oven by-products continues curtailed, while demand for several items has improved. As a result, prices are firmer, especially of distillates. Toluol continues active at firmer prices while benzol also is active and firm. Some improvement is reported for phenol, Spot buying of naphthalene is fairly active at firm prices. Sulphate of ammonia is inclined to drag.

## Coke By-Products

| | | |
|---|---|---|
| Per Gallon, Producers' Plants, Tank Lots | | |
| | | Spot |
| Pure benzol | $0.19 to | 0.20 |
| 90 per cent benzol | 0.19 to | 0.20 |
| Toluol | 0.27 to | 0.29 |
| Solvent naphtha | | 0.25 |
| Commercial xylol | | 0.25 |
| Per Pound at Producers' Plants in 250-Pound Drums | | |
| Phenol | 0.16 to | 0.17 |
| Per Pound at Producers' Plants | | |
| Naphthalene flakes | 3.75 to | 4.75 |
| Naphthalene balls | 4.75 to | 5.75 |
| Per 100 Pounds Atlantic Seaboard | | |
| Sulphate of ammonia | $1.80 to | $1.90 |

## Quicksilver Quiet

**New York**—The market for quicksilver is quiet. Prices are unchanged.

## Prices of the Week, Cents a Pound

| | Copper—Electro delivered | Copper—Lake delivered | Copper—Casting refinery | Straits Tin New York Spot | Straits Tin New York Futures | Lead N. Y. | Lead East St. L. | Zinc St. L. | Aluminum 98-99% | Spot Antimony | Ingot Nickel |
|---|---|---|---|---|---|---|---|---|---|---|---|
| April 22 | 9.50 | 9.87½ | 9.25 | 24.80 | 25.05 | 4.50 | 4.25 | 3.57½ | 22.90 | 6.80 | 35.00 |
| April 23 | 9.50 | 9.87½ | 9.25 | 24.75 | 24.95 | 4.35 | 4.15 | 3.50 | 22.90 | 6.80 | 35.00 |
| April 24 | 9.50 | 9.87½ | 9.25 | 24.60 | 24.87½ | 4.25 | 4.05 | 3.50 | 22.90 | 6.80 | 35.00 |
| April 25 | 9.50 | 9.87½ | 9.25 | 24.50 | 24.75 | 4.25 | 4.05 | 3.45 | 22.90 | 6.80 | 35.00 |
| April 27 | 9.50 | 9.87½ | 9.25 | 23.95 | 24.20 | 4.25 | 4.05 | 3.45 | 22.90 | 6.80 | 35.00 |
| April 28 | 9.50 | 9.87½ | 9.25 | 23.75 | 24.00 | 4.10 | 3.90 | 3.40 | 22.90 | 6.80 | 35.00 |

# Europe

**German, Belgian Steelmakers Increasing Exports to Far East —European Markets Dull**

**London**—(*By Cable*)—European iron and steel markets continue depressed. Foreign steel competition in the Birmingham district is sharp, and Welsh tin plate makers are uneasy owing to reported sales of German tin plate in Japan. The market for galvanized sheets is stagnant. Bar iron prices are weakening. Two hematite furnaces are to be started by a British producer in May.

STEEL's correspondent at Berlin reports important steel manufacturers are passing dividends. Exports are fairly active, especially to the Far East, due to lower freight rates. The correspondent at Brussels also comments on improvement in exports to the Far East. In France a little more buying by agricultural interests is noted. Automotive demand in France is somewhat better and producers are operating at satisfactory rate with fair prospects.

## Better Feeling Appears in British Steel Market

**London**—The tone of the iron and steel export markets in various European centers has improved the past week or two. Prices seem to have reached their lowest level and, in fact, a number of commodities now are quite firm. More interest has been shown recently on the part of the Russian and Far Eastern markets, and India also has been buying more freely. Even in Great Britain the atmosphere is a little brighter, and the London Iron and Steel Exchange's report of April 14 states: ". . . . so far as any change could be noted in the position, it was in the direction of an improvement in general demand. This was especially so in the case of the Continental steel trade. Continental steel prices show a tendency to harden, and this has had an indirect effect upon users of British steel; and the inquiry on export account is reported to have become more active." The report goes on to state, however, that export business in finished material still is light, particularly in steel plates and sheets.

East coast hematite producers have been enjoying better demand from the Continent, and tonnages have been sold, although at certain concessions.

From Brussels, which is one of the leading iron and steel export centers in Europe, it is reported that the movement already noted since the beginning of the month is being maintained, and that although activities are not expanding in a spectacular manner, the general tendency is more favorable than for a long time, and that the general level of prices is much firmer. The situation of the Belgian works has been made easier by the fact that a number of national producers have kept out of the market, awaiting better prices, and that this attitude also has been followed by a number of German concerns.

### Merchant Bar Prices Better

Merchant bars, after going down to £3 16s ($18.45) f.o.b. Antwerp, have recovered to £3 17s ($18.75), with Luxemburg quoting £3 18s ($19), and the Germans £3 18s 6d ($19.10). Germany, however, has shown much less intention to compete probably owing to the substantial tonnage of orders which German works recently have obtained for Soviet Russia. Sheets and hoops and bands are the weakest spots in the Belgian market at present, while semifinished steel has shown definite firmness.

From Hamburg it is reported that some interesting orders have been booked for semifinished steel, which has consequently risen in price. Important orders for this class of commodity have been received from North America, Japan, Great Britain and Sweden. India has been in the market for beams and structural steel, and 3-inch angles have been sold at £3 18s ($19), while beams, British sizes, have been sold at £3 14s ($18). Sheet bars are weak, and German works have not been able to obtain £5 ($24.30), which is the price they were asking for that product. There has been a better demand for sheets, especially the lighter gages and high grade sheets, and prices are hardening. There also has been a better demand for hoops and bands.

At the beginning of the month Russian orders were placed in Germany for plates and various specifi-

## Current Iron and Steel Prices of Europe

| Dollars at Rates of Exchange, April 27 | *British* Gross Tons U. K. Ports | | *French* Metric Tons Channel Ports | | *Belgium and Luxemburg* Metric Tons Channel Ports | | *German* Metric Tons Rotterdam or North Sea Port | |
|---|---|---|---|---|---|---|---|---|
| **Export Prices f.o.b. Ship at Port of Dispatch—By Cable** | | £ s d | | £ s d | | £ s d | | £ s d |
| **PIG IRON** | | | | | | | | |
| Foundry No. 3**..... | $14.22 | 2 18 6* | $12.15 | 2 10 0 | $12.15 | 2 10 0 | $12.15 | 2 10 0 |
| Basic-bessemer..... | 14.58 | 3 0 0† | 11.54 | 2 7 6 | 11.54 | 2 7 6 | 13.37 | 2 15 0 |
| Hematite, Phos. .02-.05 | 16.16 | 3 6 6 | ..... | ..... | ..... | ..... | 17.01 | 3 10 0 |
| **SEMIFINISHED STEEL** | | | | | | | | |
| Billets..... | $26.12 | 5 7 6 | $16.77 | 3 9 0 | $16.77 | 3 9 0 | $16.04 | 3 6 0 |
| Wire rods..... | 41.31 | 8 10 0 | 24.30 | 5 0 0 | 24.30 | 5 0 0 | 24.30 | 5 0 0 |
| **FINISHED STEEL** | | | | | | | | |
| Standard rails..... | $40.10 | 8 5 0 | $31.59 | 6 10 0 | $31.59 | 6 10 0 | $31.59 | 6 10 0 |
| Merchant bars..... | 1.68c | 7 15 0 | .85c | 3 17 0 | .85c | 3 17 0 | .86c | 3 18 0 |
| Structural shapes..... | 1.68c | 7 15 0 | .78c | 3 10 6 | .78c | 3 10 6 | .78c | 3 11 0 |
| Plates..... | 1.79c | 8 5 0 | .96c | 4 7 6 | .96c | 4 7 6 | 1.00c | 4 11 0 |
| Sheets, black, 24 gage | 1.90c | 8 15 0 | 1.80c | 8 4 0 | 1.80c | 8 4 0 | 1.84c | 8 7 6 |
| Sheets, gal., 24 ga. corr. | 2.71c | 12 10 0 | 2.23c | 10 2 6 | 2.23c | 10 2 6 | 2.31c | 10 10 0 |
| Bands and strips..... | 2.06c | 9 10 0 | .96c | 4 7 6 | .96c | 4 7 6 | .96c | 4 7 6 |
| Plain wire, base..... | 2.06c | 9 10 0 | 1.08c | 4 18 6 | 1.08c | 4 18 6 | 1.10c | 5 0 0 |
| Galvanized wire, base.. | 2.39c | 11 0 0 | 1.43c | 6 10 0 | 1.43c | 6 10 0 | 1.40c | 6 7 6 |
| Wire nails, base..... | 2.39c | 11 0 0 | 1.10c | 5 0 0 | 1.10c | 5 0 0 | 1.16c | 5 5 0 |
| Tin plate, box 108 lb... | $ 3.77 | 0 15 6 | ..... | ..... | ..... | ..... | $ 8.26 | 1 14 0 |

| | | | French Francs | | Belgian Francs | | Renten Marks | |
|---|---|---|---|---|---|---|---|---|
| **Domestic Prices at Works or Furnace—Last Reported** | | | | | | | | |
| Fdy. No. 3 Pig Iron** | $14.22 | 2 18 6 | $11.93 | 305(2) | $12.79 | 460 | $18.59 | 78 |
| Basic pig iron..... | 14.58 | 3 0 0 | 12.71 | 325(1) | 11.95 | 430 | 20.37 | 85.50 |
| Furnace Coke..... | 2.92 | 0 12 0 | 6.18 | 158 | 5.00 | 180 | 5.10 | 21.40 |
| Billets..... | 26.12 | 5 7 6 | 19.16 | 490 | 17.24 | 620 | 26.33 | 110.50 |
| Standard rails..... | 1.79c | 8 5 0 | 1.41c | 785 | 1.57c | 1,210 | 1.37c | 127 |
| Merchant bars..... | 1.68c | 7 15 0 | .92c | 510 | .88c | 680 | 1.38c | 128 |
| Shapes..... | 1.90c | 8 15 0 | .99c | 550 | .86c | 665 | 1.35c | 125 |
| Plates..... | 1.95c | 9 0 0‡ | 1.26c | 700 | 1.03c | 790 | 1.58c | 147 |
| Sheets, black, 24 gage | 1.90c | 8 15 0 | 2.21c | 1,225 | 1.89c | 1,450 | 1.26c | 117 |
| Sheets, gal. 24 ga., corr. | 2.39c | 11 0 0 | 2.66c | 1,475 | 2.54c | 1,950 | 3.56c | 330 |
| Plain wire..... | 2.06c | 9 10 0 | 1.98c | 1,100 | 2.08c | 1,600 | 2.24c | 207 |
| Bands and strips..... | 2.06c | 9 10 0 | 1.22c | 680 | 1.39c | 1,075 | 1.60c | 148 |

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 12s 0d ($2.92) f. o. b. Ferromanganese £16 9s 0d ($79.95) delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f. o. b.; **Silicon 2.50-3.00. British quotations are for basic openhearth steel. French, Belgian, Luxemburg, and German are for basic-bessemer steel.

cations of steel products, including wire rod and tubes.

France also has experienced a better export demand. French exporters are more concerned about the tendencies of the British trade policy. Apparently the French are not so much concerned as to whether the British eventually set up a definite duty against imported steel, as it is believed that in that case arrangements might be arrived at whereby each country would be given the advantages of the most favorized nation; what is mostly feared is that a policy of safeguarding such as that set forth by the Conservative party, or, what would amount to the same thing, a temporary tariff for revenue, might be imposed. French exporters claim that should this be the case, they would be placed in an uncertain position and would not be afforded an opportunity for bargaining.

The whole situation now is somewhat complicated, and it is understood that conversations are being carried on through diplomatic channels. It must be noted, however, that most French exports into Great Britain consist of semifinished steel, and that should the British market be closed to French semifinished products, French producers would turn their attention toward exporting finished products to markets which now are being exploited by the British. The level of French prices has not changed much, but the general tone is firm and exporters are quoting prices competitive with Belgian and Luxemburg offers.

## French Compete Keenly and Prices Suffer

**Paris**—There is no marked improvement in industrial conditions in France. Considerable interest is shown by French industrialists in developments in other countries, particularly in the United States, as it is believed that no definite improvement will occur until a change for the better has made itself felt in America. Concurrently with the trade depression, French collieries have been threatened with a strike, following the decision to reduce wages, and, in fact, local strikes did take place in the north and center of France.

Semiphosphorus pig iron remains fairly firm at about 335 francs ($13.10). In the domestic steel market there has been a moderate demand for merchant steel, and mill books are pretty well filled. Prices are keenly discussed and as soon as an interesting inquiry appears, most works compete for the business with the result that prices are weak. The following prices have prevailed during the past few days in the east of France: 480 to 500 francs ($18.75 to $19.55) for merchant bars; 460 to 470 francs ($18 to $18.25) for small angles; 450 to 460 francs ($17.55 to $18) for reinforced concrete bars. In the north of France, merchant bars are sold at 510 to 520 francs ($19.90 to $20.30). There has been a slight revival in the plate and sheet market. Although the syndicate reduced prices last month, it still is considered that the level is too high, particularly for ship plates.

There is an improvement in the automobile industry. One of the large manufacturing firms, Peugeot, is making no price reduction, and the output is on a satisfactory basis. At Renault's works production also is increasing. There is a fair volume of sales, and the outlook is considered fairly satisfactory.

While there certainly has been improvement in iron and steel markets at the beginning of the spring season, it is felt that business in general is at a considerably lower level than at this time in previous years. Although great expectations had been placed on large orders from the government departments for national equipment, the present tendency is to slow down, with the exception of work in connection with fortresses on the eastern frontiers, which has resulted in a large volume of orders being passed for reinforced concrete bars.

## Middlesbrough Exports Increase in March

**Birmingham, Eng.**—Manufactured iron and steel shipments from the Tees in March totaled 44,122 tons, compared with 31,357 tons in February. The increase was chiefly due to an expansion of trade with South Africa but an improved business has also been done with India and orders in hand promise continuance of the improvement in steel exports. The Union of South Africa took 6778 tons of steel and India bought 5139. The next largest customer was Kenya, taking 2935 tons and the Argentine bought 1824 tons. Of the total 24,895 tons went abroad and 12,141 tons were shipped coastwise to English ports.

The export trade in pig iron shows a continued shrinkage and totaled 7258 tons. Of this 4282 tons went to Scotland and other coast ports, leaving only 2976 tons for export to countries abroad. The largest buyer of pig iron was Italy, taking 800 tons.

## German Trade Slack

**Berlin**—Exports of pig iron and ferroalloys from Germany in January were 9842 metric tons, compared with 11,355 tons in December, 1930. Exports of other iron and steel products in January showed an improvement in comparison with those of recent months, reaching 362,912 metric tons, against 325,239 tons in December, 1930.

Imports of iron and steel in January were unusually low, those of pig iron and ferroalloys being 9962 metric tons, compared with 10,168 tons in December, 1930, and those of other iron and steel products 68,329 tons, against 74,962 tons. Comparisons follow:

| | IMPORTS | | EXPORTS | |
|---|---|---|---|---|
| Mon. ave. | Pig iron and ferro-alloys | Other iron and steel | Pig iron and ferro-alloys | Other iron and steel |
| 1928 | 25,535 | 174,250 | 24,585 | 394,575 |
| 1929 | 14,765 | 137,435 | 36,115 | 448,330 |
| 1930 | 14,340 | 94,320 | 19,000 | 380,500 |
| 1931 | | | | |
| Jan. | 9,962 | 68,329 | 9,842 | 362,912 |

## French Coke Output Steady

**Paris**—Output of coke at the French collieries in January was about equal to that of December, 1930. Imports of coke in January were less than in December, 1930. Comparisons follow:

| Mon. ave. | Production | Imports | Exports |
|---|---|---|---|
| 1913 | 335,620 | 255,835 | 17,085 |
| 1928 | 366,660 | 447,330 | 34,810 |
| 1929 | 397,435 | 453,720 | 39,070 |
| 1930 | 421,235 | 380,460 | 27,505 |
| 1931 | | | |
| Jan. | 423,789 | 326,007 | 23,116 |

## British Imports Excessive

**London**—A further drop was registered in exports of iron and steel from Great Britain in February. It is to be noted that for each of the first two months of this year the tonnage of iron and steel exported from Great Britain was smaller than the tonnage imported. Comparative figures follow:

| | IMPORTS | | EXPORTS | |
|---|---|---|---|---|
| Mon. ave. | Pig iron and ferro-alloys | Other iron and steel | Pig iron and ferro-alloys | Other iron and steel |
| 1928 | 9,935 | 231,390 | 37,895 | 317,210 |
| 1929 | 12,310 | 222,410 | 45,430 | 319,520 |
| 1930 | 26,010 | 216,355 | 26,445 | 236,715 |
| 1931 | | | | |
| Jan. | 23,345 | 198,428 | 18,743 | 148,630 |
| Feb. | 20,836 | 156,220 | 13,840 | 129,685 |

## German Output in Decline

**Berlin**—Output of pig iron and steel in Germany in February reached record low figures, particularly in pig iron and finished steel. Comparative figures follow, in metric tons:

| Mon. ave. | Furnaces on last day | Pig iron | Steel ingots and castings | Finished steel |
|---|---|---|---|---|
| 1913* | 204 | 910,000 | 993,000 | 970,000 |
| 1928 | 101 | 985,000 | 1,210,000 | 881,000 |
| 1929 | 95 | 1,117,000 | 1,354,000 | 940,000 |
| 1930 | 63 | 808,000 | 962,000 | 679,000 |
| 1931 | | | | |
| Jan. | 61 | 603,104 | 772,776 | 539,850 |
| Feb. | 53 | 520,176 | 759,633 | 527,436 |

*In present boundaries.

## Beams From Broadway

(*Concluded from Page* 25)

Another item, entering into the plumbing contract for the Empire State, was steel pipe. Fifty miles of steel pipe, up to 14-inch, and weighing 2000 tons, was used, furnished by the Youngstown Sheet & Tube Co. The M. O'Neil Supply Co., Brooklyn, fabricated the pipe, having a subcontract under J. L. Murphy Inc., who held the major plumbing job. There are close to 400 tons of aluminum castings in the structure, a good part of them in the tower.

◆

Present plans call for erection of structural steel to start on the Port Authority inland freight terminal Sept. 1 although it has not yet been let. Work on the foundation is under way. This terminal will occupy a block between Eighth and Ninth avenues, Fifteenth to Sixteenth streets. The Union inland terminal will be a less-than-carload freight station for all trunk line railroads served by their own motorized equipment.

There will be sorting platforms for shippers and consignees who will greatly benefit by this "one dump-one pick-up" for all destinations. The upper 14 floors of the building will have ample elevator service for package and carload freight direct to the railroad floors.

Warehouse building has been heavy for a year, furnishing a good market for structural steel, but outside of this terminal little new work is heard of. One of the largest warehouses built in New York, the Lehigh Valley, is nearing completion.

## Space Demand Is Met

Apartment and private building is at a low ebb. There has been a moderate increase in 6-story apartments in Brooklyn, Queens and the Bronx, but these do not take much structural steel, generally under 100 tons. Activity in office building is listless with many structures started a year or more ago being completed. As a result the renting situation is badly mixed.

The Mandel interests continue most active among private builders, recently announcing a plan for more extensive development of Chelsea Corners, where they already have several apartments completed or under way. This builder erected the London Terrace apartments.

Most demand for structural steel continues to be for public work. Many of these projects, however, went or are going forward under stimulus of the dull business situation, the result of demand that this work be done now.

Architects are somewhat divided on the use of new alloys in interior and exterior, one prominent leader declaring this a fad. However, others claim that use of steel alloys in buildings has only started and that it will increase.

Stephen F. Voorhees, New York, supervising architect for Princeton university, in a recent statement to the *Daily Princetonian* had this to say regarding future towering office structures:

"Vertical transportation will not cover more than 1250 feet until further inventions come to light to facilitate it."

The physical limit of skyscrapers has not been reached "by any means," he said, but loftier structures must wait on improved means of elevation. A recent comparison has shown that more people use vertical than horizontal means of transportation each day, Mr. Voorhees declared.

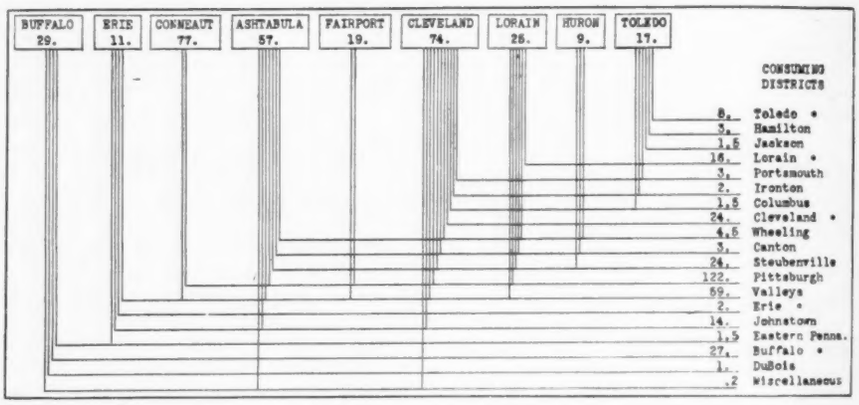
"This does not, of course, indicate that people go further one way or the other," he said, "but that more trips are made daily on the elevators than on the railways."

## Metal Groups Employ More

Washington—Iron and steel and nonferrous metal groups showed employment gains of 0.8 per cent each in March over February, according to the bureau of labor statistics.

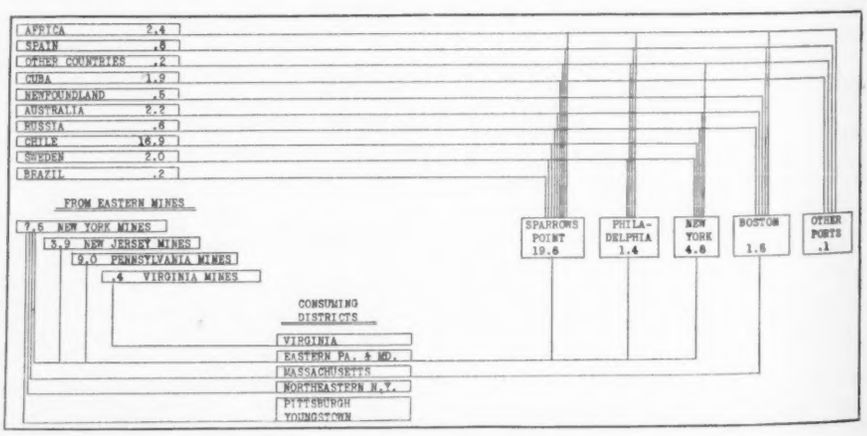
In individual industries, iron and steel employment increased 1.5 per cent while foundries and machine shops showed a gain of less than one-tenth of 1 per cent.

# Shipments of Lake, Eastern and Imported Iron Ore Traced to Destinations




DISTRIBUTION of Lake Superior iron ore from Lake Erie ports to consuming centers in 1930 is shown in the above chart, issued by the Lake Superior Iron Ore association, Cleveland. The figures indicate tonnages in units of 100,000; and the asterisk that some of the ore was for local consumption.

It will be noted that the port of Conneaut received the largest amount of ore, but distribution was made only to two points. The chart below shows the imports of ore, places of origin, receiving ports and distribution from these ports to consumers. Shipments by eastern mines to consuming points also are indicated.



# Machinery

DUE more to the publication of many depressing reports on first quarter operations, rather than to any marked change in the machinery market, an unduly gloomy spirit permeates machine tool circles this week. As was the case last week, Chicago is an exception. Though by no means brisk, the machinery business there shows signs of picking up. Expectations of late spring recovery elsewhere grow fainter as increased automobile production fails to translate itself into equipment orders. One definite sign of the extinction of spring hopes is the postponement of the opening of one of New England's outstanding new industrial plants.

**New York**—There is no life in the machine tool market, both buying and inquiry having slumped. Some dealers and builders report that April business to date has fallen below March level. The market appears to have settled down to await development of general business. Sales generally are limited to one or two tools at a time, orders being well spread over a wide range of industries. Buying of grinding equipment, while slow, is slightly more active than that for other machinery lines. It is a peculiar circumstance that what orders there are, commonly are placed with the understanding that delivery is to be rushed. A midwest refrigerator builder ordered several machines in the East and an automobile plant also has ordered a few grinders. The situation in Connecticut is reported spotty. Russian interests still indicate that they have worthwhile business to place.

**Worcester, Mass.**—An already stagnant machinery market is expected to react unfavorably to the announcement that the unique $1,500,000 "windowless" plant of the Simonds Saw & Steel Co., Fitchburg, Mass., will not be opened on June 1 as heretofore planned. Unsatisfactory general business conditions account for this, according to Gifford K. Simonds, general manager of the company.

While there will be no delay in the completion of the building, the Austin Co., Cleveland, in the meantime going ahead with construction according to schedule, new machinery, already contracted for, probably will not be put in operation for several months.

Inquiry from New England sources continue to be scattered and spotty, reflecting the same uncertainty which has been apparent in Worcester manufacturing circles for several weeks.

**Pittsburgh**—While machine tool dealers are booking occasional orders, the volume of business shows little, if any, gain over the quiet rate of recent weeks. April business in this territory is about equal to that of the corresponding period in March. Inquiry also is light and usually covers only individual tools. Westinghouse Electric & Mfg. Co. has a number of items pending but has not placed much equipment recently. The crane market is lacking in activity, both in awards and inquiry.

**Cleveland**—Improvement in the rate of automobile production has not been sufficient to bring about the expected spring revival in machine tool buying, although keen interest in new designs continues to be apparent in that direction. Many builders and dealers frankly are pessimistic about the outlook for the next three months. This gloomy view can be charged in some measure to the recent announcement of results of first quarter operations. Those of equipment builders are apt to show deficits about equal to profits of the corresponding period one year ago.

Negotiations are under way between local machine tool builders and Russian interests on orders of considerable size. The closing of this business seems to be delayed longer than heretofore, which leads to the inference that more difficulty is being met in coming to terms on credit arrangements. Other foreign business, which has carried Cleveland machine tool builders through many past depressions, now is almost entirely lacking. Expert observers expect domestic recovery to precede recovery of this foreign market.

**Chicago**—Machine tool sales in the last few days, while far from brisk, were the best thus far this month. Santa Fe railroad purchased a half dozen tools against its pending list, and several drills, lathes and used tools were sold. Chicago, Milwaukee, St. Paul & Pacific has added items to its list issued two weeks ago, these including a 24-inch boring mill, two portable pipe threading machines, a vertical pump, a 12 x 2-inch grinder, two small pressure blowers, a motor driven bilge pump, an 18 x 3-inch motor driven floor grinder, three air motor hoists, several portable tools and some electrical control equipment. Purchases against the St. Paul and Union Pacific lists are not expected to be made for several weeks. The inference is that the recent merger of two implement and tractor companies in this territory will result in some equipment purchases for a northern Indiana plant.

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Sommerset Foundry & Machine Co., Sommerset, Pa., has been formed by the merger of the Sommerset Garage & Machine Co., J. Roy Adams Co., and the Sommerset Foundry & Machine Works.

## Exports of Metalworking Machinery

| | March | | January through March | |
|---|---|---|---|---|
| | 1931 | 1930 | 1931 | 1930 |
| Engine lathes | 63 | 108 | 153 | 261 |
| Turret lathes | 35 | 48 | 75 | 115 |
| Other lathes | 61 | 81 | 177 | 219 |
| Vertical boring mills and chucking machines | 33 | 29 | 63 | 80 |
| Thread-cutting and automatic screw machines | 24 | 65 | 59 | 224 |
| Knee and column type milling machines | 22 | 32 | 34 | 103 |
| Other milling machines | 41 | 45 | 80 | 221 |
| Gear-cutting machines | 36 | 54 | 186 | 116 |
| Vertical drilling machines | 57 | 18 | 96 | 218 |
| Radial drilling machines | 9 | 53 | 26 | 67 |
| Other drilling machines | 70 | 296 | 672 | 764 |
| Planers and shapers | 42 | 55 | 92 | 116 |
| Surface grinding machines | 12 | 23 | 33 | 81 |
| External cylindrical grinding machines | 42 | 70 | 75 | 154 |
| Internal grinding machines | 25 | 62 | 105 | 177 |
| Tool grinding, cutter grinding, and universal grinding machines | 93 | 133 | 253 | 471 |
| Pneumatic portable tools | 1,218 | 1,927 | 2,853 | 5,368 |
| Chucks for machine tools | 1,226 | 2,708 | 2,650 | 7,263 |

# Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

## New England

BEDFORD, MASS. — T. R. Shaw is reported to be in the market for equipment for light blacksmith forging.

BOSTON — Metropolitan Crushed Stone Co. has been established at Bradley and Crane streets in Hyde Park to operate quarries and process stone.

BOSTON—R. Amundsen, 25 Upham street, Dorchester, is inquiring for a bench lathe and other items.

BOSTON—Eastern Smelting & Refining Co., 109 West Brookline street, proposes to reconstruct its plant, recently damaged by fire. Cost is estimated at $40,000. Plans are private.

BOSTON—Cambridge school commissioners, recently noted as proposing construction of a technical high school, are having preliminary plans prepared by R. H. Doane, 60 Batterymarch street, Boston, architect. Structure, to be built at Broadway, Felton and Cambridge streets, will cost $1,500,000. (Noted Dec. 4).

MILTON, MASS.—City council, L. B. Flint chairman, will build a 2-story municipal building, including work shop, on Walnut street. Unit will be 2-story, 55 x 95 feet, and will cost approximately $75,000.

SPRINGFIELD, MASS.—Vanadium Alloy Steel Co., 240 Plainfield street, will build a 1-story addition, 18 x 100 feet, and a 2-story addition, 35 x 54 feet. Cost is estimated at $15,000.

PROVIDENCE, R. I.—Union Screen Co. will expand operations in an addition containing 1600 square feet, recently leased.

## New York

BROOKLYN—Paraflex Scale Mfg. Co. has been incorporated with $20,000 capital by Netter, Palley & Netter, 521 Fifth avenue, New York, to make scales.

BROOKLYN—Silver Mfg. Co. has been incorporated with $20,000 capital by M. H. Pearklam, 1170 Broadway, New York, to make electrical appliances.

BROOKLYN—Repair shop and administration building will be built by the municipal fire department, municipal building, H. J. Treacy in charge. Cost will approximate $2,000,000.

ELMIRA—Elmira Foundry Co. Inc., subsidiary of General Electric Co., River road, Schenectady, N. Y., has let contract for construction of a foundry unit, 50 x 160 feet, estimated to cost $50,000.

GLENDALE — Gordon Plumbing & Heating Supply Co. will alter its storage and shop building at Seventy-seventh avenue and Seventy-seventh street. A. Abrams, 102 Melrose avenue, Lynbrook, N. Y., is architect. Estimated cost, $40,000.

NEW YORK— East River Iron & Steel Co. has been incorporated with $10,000 capital by M. Altschuler, 501 East 161st street.

NEW YORK—Carburetor Combustion Corp. has been incorporated with $100,000 capital by Pfeiffer & Grames, 15 East Forty-first street, to make coal saving devices.

NEW YORK—W. A. Griffin Products Co. has been incorporated with $20,000 capital by H. Schantz, 345 Madison avenue, to make aluminum products.

NEW YORK—McNeil Instrument Corp. has been incorporated with 10,000 common shares by S. V. Ryan, Albany, N. Y. to make machine-propelled devices.

RANDOLPH—New York State Electric & Gas Corp., Ithaca, N. Y., proposes to build a power plant here.

SYRACUSE—New York Central railroad, 466 Lexington avenue, New York, has plans for an expansion program in its yards and shops here. Cost is estimated at $3,700,000.

## New Jersey

LAKEHURST—Bureau of supplies and accounts, navy department, Washington, will receive bids May 12 on schedule 5629 for one air liquefaction and helium purification unit.

PATERSON—Advance Motor Corp. has been incorporated with $250,000 capital by Andrew C. Frommelt, 115 Market street, to operate a foundry. Adrian Gerritsen, 360 North Tenth street, is interested.

PLAINFIELD—Niles Gear Co. has been incorporated with 1000 no par shares by McDonough & McDonough, to operate as manufacturers.

## Pennsylvania

BRADFORD — LaFrance-DeWolfe Products Corp. has been incorporated with $10,000 capital by M. L. Jordan, to manufacture and distribute vacuum cleaners and vacuum power units.

PHILADELPHIA—Yarnall Waring Co., 102 East Mermaid lane, has let contract to Melvin H. Grebe, 3 East Highland street, for construction of a shop addition. Cost is estimated at $3000.

WEST PHILADELPHIA—Plant of Empire Iron & Metal Co., 4841 Aspen street, recently was damaged by fire.

## Ohio

CINCINNATI—Truscon Steel Co., Dixie Terminal building, has private plans for a warehouse and bar yard on Dellway avenue. Unit will be 80 x 150 feet. Contract is held by J. & F. Harig, Queen City avenue.

CINCINNATI—City has let contract to Pittsburgh-Des Moines Steel Co., Neville island, Pittsburgh, for erection of an incinerator on Crookshank road and another on Dunbar avenue. Each is to cost $70,000.

CLEVELAND—Ohio Spring Co., 1846 East Fortieth street, will occupy a new plant under construction on a site 60 x 105 feet on Carnegie avenue.

CLEVELAND—Smith Engineering Co., 1982 West Seventy-fourth street, is expanding facilities for production of airplane parts and will require equipment. S. H. Smith is president and general manager.

CLEVELAND—H. J. Bowie Co., H. J. Bowie president, 9205 Inman avenue, has private plans for a plant addition, 1-story, 48 x 77 feet. Contract has been let to C. A. Carson Co., 5716 Euclid avenue.

CLEVELAND—Gulf Refining Co., E. H. Gibson assistant engineer of construction, Battery Park building, New York, will build 23 steel plate storage tanks and a group of buildings at West Third street and Jefferson avenue here. Warehouse will be 100 x 166 feet; garage will be 85 x 156 feet; boiler house and machine shop, 40 x 60 feet; and pump house, 40 x 60 feet.

COLUMBUS—Jones Auto Radiator Co., 74 North Fourth Street, C. Bowsman president, will install new equipment at 130 East Spring street, including metalworking machinery.

COLUMBUS—Harding Foundry & Furnace Supply Co. has been incorporated with $25,000 capital by Beman Thomas & Co., 635 Huntington Bank building, to operate a foundry. Earle O. Buxton, 2638 Glenmawr avenue, is interested.

COLUMBUS—Home Appliance Mfg. Co. has been incorporated with $25,000 capital to manufacture a device invented by M. P. Linton, 106 Linton street. Galvanized iron will be used for the manufacture of a milk container. W. K. Childers will be president, W. H. Fledderjohann vice president and F. E. Paine secretary of the company.

LORAIN—City, Paul J. Goldthorp mayor, plans improvements to its waterworks system, including installation of auxiliary pumps. Estimated cost, $25,000. Paul Cook is service director.

SPRINGFIELD—Wheel, Spring &

Heat Treating Co. has been incorporated with 250 no par shares by Harry W. Snodgrass, First National Bank building.

TOLEDO—Acme Steel Blanking Co. Inc. has been incorporated with 250 no par shares by M. M. Garfinkel, 338 Spitzer building.

ZANESVILLE—Zane Casting Co., H. V. Dockray & Sons proprietors, box 323, advises that with construction of new foundry and machine shop recently noted, company's production will range from castings of under one pound to castings of ten tons. Company manufactures bronze, bronze alloys and semisteel. (Noted April 23).

## Indiana

BLOOMINGTON—City will build a pumping station on Griffy creek at a cost of $15,000. Pearce, Greeley & Hansen, 6 North Michigan boulevard, Chicago, are engineers.

EVANSVILLE—Mead-Johnson Co., 200 South St. Joseph street, has let contract to Hoffman Construction Co., Union Bank building, for a 2-story laboratory, 40 x 65 feet. Estimated cost, $42,000.

SOUTH BEND—Notre Dame university, C. L. O'Donnell president, has plans for an engineering building to cost $500,000. F. W. Kerrick is architect.

## Michigan

DETROIT—Stone Electric Heater Co., 1132 Clay avenue, has been incorporated with 10,000 no par shares by Albert J. Stone, to manufacture electrical heaters and appliances.

DETROIT—Ford Motor Co., Fordson, Mich., is having plans prepared by Albert Kahn, 1004 Marquette building, for construction of an assembly plant, 400 x 600 feet, to be erected in Mexico City, Mex.

IMLAY CITY—Sport Air Craft Co. has moved here from Rochester, Mich., and will establish an airport and plant.

IMLAY CITY—Imlay City Mfg. Co. is starting production in a foundry on South Almont avenue. Bronze and aluminum articles will be manufactured.

NILES—Heath Airplane Co., 1727 Sedgwick avenue, Chicago, will move its plant here and manufacture small planes and accessories. Local chamber of commerce is arranging for location. Company will employ about 60.

OWOSSO—Hartley Machinery Co. has purchased one of the plant units of the Owosso Foundry Co. and will build an addition, 30 x 120 feet. Company manufactures machines for polishing stainless steel.

SAULT STE. MARIE—United States Engineering office will build a 1-story shop and warehouse here, 161 x 202 feet. Low bidder is Merritt-Chapman & Whitney Corp., Duluth, Minn.

## Illinois

BELLEVILLE—Constructing quartermaster, Scott field army air station, is in charge of new construction here, to include hangars and shops. Preliminary plans are being prepared. Total expenditure is estimated at $3,117,000.

CHICAGO—American Can Co., 104 South Michigan avenue, will install handling equipment in a shipping shed to be built at 60007 South Western avenue. Cost is estimated at $35,000.

CHICAGO—Four-story plant of R. M. Eddy Foundry Co., 372 West Grand avenue, recently was damaged by fire, with loss estimated at $150,000. Company produces gray iron and semisteel castings, specializing in printing press parts.

CHICAGO—Engineers Mfg. Co., 108 North Jefferson street, has been incorporated with $100,000 capital by Frances J. Sullivan, 134 North LaSalle street, to deal in iron, machinery and other products.

LOCKPORT—F. J. Bitterman Steel Products Inc. is being organized here with $250,000 and 50,000 common shares by F. J. Bitterman, 1401 Cass street, Joliet, Ill., to manufacture septic, pneumatic, storage, oil burner and other tanks. Company proposes to take over the Joliet Bridge & Iron Works plant in Joliet township and remodel and expand it.

MOOSEHEART—Vocational training school will be built here by Loyal Order of Moose, expenditure to total $1,500,000. J. J. Davis, director general of Supreme Lodge, Washington, D. C., is in charge.

## Southern States

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids May 12 on schedule 5578 for a 10-ton crane, gasoline engine operated, with spare parts and special tools.

OCALA, FLA.—Leonard Todd, chairman of airport board of control, is in charge of proposed construction of a hangar at Taylor field.

RUSSELL, KY.—Chesapeake & Ohio railroad, Richmond, Va., plans expansion of its yards and shops here, at a cost of $500,000.

WALTON, KY. — Projectomatic Scoring Machine Co. has been organized here by F. M. Walton and S. W. Allen, to make devices and apparatus.

CENTREVILLE, MD.—City council has plans for a municipal light plant, to cost approximately $70,000. Bonds have been approved.

OXFORD, MISS.—W. C. Trotter, secretary of state building commission, capitol building, Jackson, Miss., will receive bids May 7 for a centrifugal pump, motor, and other items, for installation at the University of Mississippi.

OTEEN, N. C.—Power plant and other units will be erected at the veterans' hospital here, at a cost of $650,000. Plans are being prepared under the supervision of the United States veterans' bureau, Washington. Col H. C. Dodge is in charge here.

KNOXVILLE, TENN.—MacDonald Steamotor Co., box 1335, advises through L. G. Sheddan, vice president and general manager, that the company will open a plant about May 1. Company is in the market for a used spinning lathe, 40 x 60 inches. (Noted April 23.)

HAMPTON ROADS, VA.—Bureau of supplies and accounts, navy department, Washington, will receive bids May 12 on schedule 5610 for one precision toolroom lathe.

QUANTICO, VA.—Bureau of yards and docks, navy department, Washington, has let contract to M. H. Pagenhardt Co., 4100 Cathedral avenue, Washington, for construction of a boiler plant at the marine barracks here.

WINCHESTER, VA. — Generator building will be built here by H. J. Heinz Co., Pittsburgh, preliminary construction work having started. Contract is held by George F. Hazelwood, Howard street, Cumberland, Md. Cost, for erection only, is estimated at $30,000.

## Missouri

KANSAS CITY—J. G. Jakobe & Sons Inc., 818 East Fifteenth street, has acquired a site, 50 x 148 feet, at 2912 Main street, where it will erect a new plant for the fabrication of sheet metal products.

ST. LOUIS—General Engineering & Mfg. Co., J. Schreiber president, 1519 South Tenth street, will expand facilities at its local plant.

ST. LOUIS—St. Louis Meter & Pump Co. has been incorporated with $150,000 capital by C. C. Fredericks, 3745 Lindell boulevard.

## Oklahoma

OKLAHOMA CITY—J. I. Case Co., 700 State street, Racine, Wis., will build a 1-story addition, 50 x 210 feet, at its branch plant here. Frank J. Hoffman, architect, James building, Racine, will take bids.

## Texas

DALLAS—Mid-Kansas Oil & Gas Co., subsidiary of Ohio Oil Co., is considering construction of a 100-mile oil line from the East Texas oil field. Two pumping stations will be included.

ENNIS—B. S. Hollimon, superintendent, Dallas division, Southern Pacific lines, Dallas, Tex., advises that shop improvements here include installation of a turntable, which has been completed, and construction of 10 additional stalls to roundhouse, new drop pit and 10 new engine pits. (Noted April 23.)

FT. WORTH—Texas & Pacific railway, E. F. Mitchell chief engineer,

Dallas, Tex., is taking bids on new coach yard facilities including a boiler shop and compressor room, in connection with terminal expansion here.

## Wisconsin

GREEN BAY—Motors in the plant of Green Bay Drop Forge Co., 1341 State street, recently were damaged by fire, with loss estimated at $5000.

MILWAUKEE—Milwis Steel Co. has been incorporated with $20,000 capital by B. F. Saltzstein, 2170 Lake drive, to deal in steel, iron and allied products.

## Nebraska

OMAHA — Creighton university, Twenty-fifth and California streets, will erect a 4-story engineering school and laboratory, preliminary plans for which are being prepared. Cost is estimated at $250,000.

## Colorado

PUEBLO—Midwest Chemical Co. has started construction of a plant for the manufacture of alum, barium, magnesium and aluminum. Officers are Harry P. Vories, Arthur L. Allen and J. D. Thomas.

## Pacific Coast

BURLINGAME, CALIF. — City, C. M. Thomas engineer, is preparing plans for a sewage plant and pumping station, estimated to cost $25,000.

MARE ISLAND, CALIF.—Bureau of supplies and accounts, navy department, Washington, will receive bids May 12 on schedule 5617 for one 16-inch motor-driven engine lathe.

SEATTLE—United Ore Refining & Testing Co. has been incorporated with $15,000 capital by S. J. Leask.

## Dominion of Canada

TURNER VALLEY, ALTA.—Hercules Mining & Smelting Co. Ltd., London, Eng., is reported to be investigating sites here for a plant to utilize gas for the production of electricity. Estimated cost, $10,000,000.

WINNIPEG, MAN.—Canada Airways Ltd., W. S. Brintnell manager, 804 Trust & Loan building, proposes to build a hangar unit. Cost is estimated at $200,000.

TORONTO, ONT.—Norge Electric Refrigeration Ltd., care of DeForest Crosley Co. Ltd., 245 Carlaw avenue, is considering erection of a manufacturing plant.

TORONTO, ONT.—Young-Durham Mfg. Co. Ltd., King and Bathurst streets, advises through W. N. Young, president and general manager, that the company will manufacture springs and similar products. Plant has been leased. Additional equipment may be added in the future. (Noted April 2.)

WELLAND, ONT.—City is planning construction of a new deep water dock on the Welland canal. L. B. Spencer is chairman of the commission in charge. Expenditure of $200,000 is being considered.

WILLOW GROVE, ONT.—Canadian Gypsum Co. Ltd., 1221 Bay street, will erect a plant here, to be placed in operation by next fall. R. Rogers, Connaught Hotel, Montreal, Que., will be in charge.

MONTREAL, QUE.—Thermodaire & Refrigeration Ltd., 5182 Cargrain street, is considering erection of a manufacturing plant. Plans are in progress.

MONTREAL, QUE. — Aerocrete Construction Co., 1226 University street, advises through E. R. Smallhorn that contract has been awarded to A. F. Byers & Co. Ltd. for three steam curing rooms, 85 x 91 feet, machinery room, boiler room and storage shed, 91 x 250 feet. Boilers and major equipment items have been secured. (Noted April 16.)

# New Trade Publications

AUTOMOBILE VALVES — Toledo Steel Products Co., Toledo, O., has issued its annual catalog of valves for automobiles, tractors, and motors. The information it offers is of value to all valve users.

CENTRIFUGAL PUMPS — Barrett, Haentjens & Co., Hazleton, Pa., illustrates in a current bulletin its equipment for washing coal, pumps designed for this particular service. Illustrations show installations of various capacities.

ISOLATION—The current number of its publication, "Isolation," by the Korfund Co. Inc., New York, contains much information about methods of eliminating vibration of machinery in buildings by the use of the company's products.

INDUSTRIAL BUILDING—Truscon Steel Co., Youngstown, O., illustrates in a broadside its types of standardized units for industrial buildings. It includes a large number of structures now in use in which the company's designs have been used.

BROACHING PRESS — Nichols & Rainsford, Citizens building, Cleveland, have prepared a bulletin on its assembling and broaching press for assembling, bending, drawing, serrating, punching and broaching. It is illustrated.

MOTOR CONTROL—A bulletin by the Allen-Bradley Co., Milwaukee, illustrates its automatic control devices for small motors, in a variety of forms for varied uses. Usefulness of these devices in safeguarding the machines and workers is outlined.

PICKLING EQUIPMENT — Weaver Bros. Co., 9315 Sandusky avenue, Cleveland, has issued a bulletin on its line of equipment for pickling departments. It covers various types of containers fabricated of metals which resist acid and corrosion.

STEEL SECTIONS AND EXTRAS—A booklet by Inland Steel Co., Chicago, is entitled "Sizes We Roll and Standard Extras." It includes all standard extras and differentials applying to bars, plates, structurals and rail steel products and a complete list of sizes rolled by this company. It is of vest-pocket size.

COMPRESSION FITTINGS — Bulletin No. 13 of the Bailey Meter Co., Cleveland, has to do with dieform compression fittings for use with copper or steel tubing for small service lines. A section deals with test water-cooling coils for obtaining boiler test water samples. It is well illustrated in colors.

LIGHTING CABLE—A folder from the Sullivan Machinery Co., 30 Church street, New York, describes a safety lighting cable for extension lighting uses. The new cable assembled to exacting electrical standards is recommended to replace makeshift lighting extensions.

INDICATING CONTROLLER—Brown Instrument Co., Philadelphia, has published a broadside describing and illustrating its new indicating control instrument for automatically controlling relatively high temperature processes and units, such as heat-treating furnaces, enameling furnaces, oil stills, galvanizing tanks and similar units.

POSITIVE DRIVES—Link-Belt Co., Chicago, in a new book, No. 1293, describes its line of positive drives, including silent chain, roller chain, herringbone gears, herringbone speed reducers, worm gear speed reducers, steel and malleable chain and positive, infinitely variable speed transmission. Installations of these drives are pictured, with descriptions telling of their scope.

WORM REDUCERS—A catalog, No. 301, has been issued by Foote Bros. Gear & Machine Co., 215 North Curtis street, Chicago, covering its line of worm reducers. It describes the evolution of worm gearing and also goes into the customer's problem, design, manufacturing methods, materials and selection of units. Data are given on efficiencies. It is in effect a handbook on the subject.

PIPE WELDING—Gas Products Association, 250 East Ontario street, Chicago, has issued a book on pipe welding. It covers important phases of various types of welded steel and wrought iron pipe for industrial use. It includes; Alignment, spacing, layout of templates, reducers and bull plugs. It also covers fabrication of headers, use of tube turns, long-neck welding flanges and construction of expansion loops and anchors. Tables of cost data also are given. A charge of 50 cents is made.